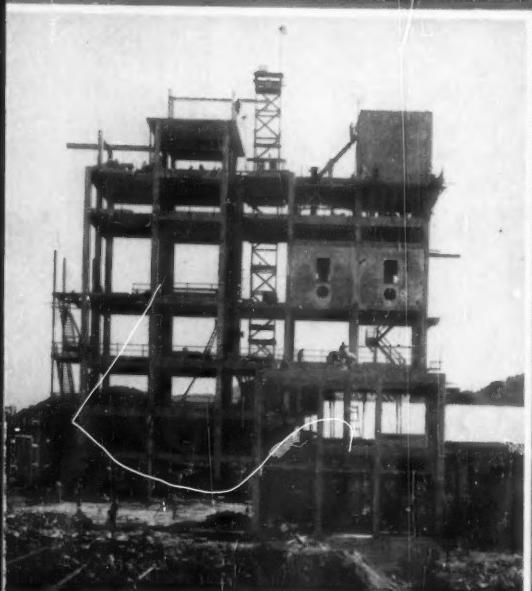


# Chemical Week

July 7, 1956

Price 35 cents



**Chemical firms are worried about the decisions in steel—but not much . . . . . p. 19**

► **Build a plant in Brazil.** It's one way you can get around the dollar shortage there . . . . p. 30

**Specialty firms fail** for three big reasons. Here's what you should watch out for . . . . . p. 64

**How long can U.S. control world sulfur?** Mexican output heads for 1.6 million tons/year by '58 . p. 72

► **UMW's (Denny) Lewis:** 'Scientists and engineers would be foolish not to organize' . . . . . p. 82

beauty—and it is also true that the con-  
flicting army of Sherman has committed, upon  
the city proper, no needless desolation. Never-  
theless, have  
ently occu-  
y of the si-  
m more i-  
n than the  
this splen-  
t, notwith-  
stated, th-  
ect. The  
closed v-  
erything b-  
give a  
whole I-  
miles. Th-  
arces from  
solutely or  
erous imp-  
t them, th-  
ted by the  
knowing  
ston have,  
erted starv-  
nimous and  
e North h-  
heart of  
h acts e-  
y other w-  
od and  
od work  
ore help.  
ice are al-  
ll do who  
y; but the  
the North  
time beh-  
is connect-  
ur busine-  
ming to  
upply. To  
home, or  
existing  
ate of Ge-  
tion of tra-  
before say-  
er anythin-  
Pre  
With reg-  
rposes of  
et discri-  
nclusions.  
overnment  
managed by any, but, on the  
nary, the citizens are unexceptionably res-  
ctful and courteous in their deportment. At

willingness to work which we find in others,  
and when the opening spring brings with it the  
abor of the garden and field, all will find abund-

to cure, boring out the life of the tree  
sought only that of the worm. But n-  
-fect either in theory or practice, ar-  
or calves o-  
ness was it  
fine apple-  
cession, w-  
with fruit.

the secon-  
ant. So he  
hat "he w-  
ve no usele-  
ear apples,  
?"

I would s-  
tree, fath-  
absolute; "  
hat he w-  
g him."

ther of se

I'd a ladde-  
ard, order  
to drag the  
little thoug-  
o the house  
Ben surveye-  
utter of sh-  
le fence of  
cried out s-  
elf when s-  
I'm sick of  
ke-believe  
n, all laid  
lts! I wor-  
ir Scotch la

of regret  
up into th-  
mb; but  
se'f his  
he, still t-  
d the lade-  
its topme-  
and twig-  
A surprise  
the Charle-  
ocean fr-  
ach's the  
Charley!"  
ist the la-  
of the br-

# You get purity and uniformity and economy, too— when you buy solvents from **Shell Chemical**

WHEN YOU STANDARDIZE on solvents from Shell Chemical, three advantages are yours!

- You know exactly what is going into the blends you make, because Shell solvents are pure products that meet or exceed the highest industrial standards for purity and uniformity.
- Shell solvents are based on stable sources of basic raw materials, assuring dependability of supply.

- You can call on Shell's technical service staff to help you make your product a better product—at lower cost.

Next time you're ready to order solvents, check with Shell Chemical. Find out how you can save money through multi-product shipments in tank cars or tank trucks. Prompt delivery is assured from conveniently located storage facilities. Write for specifications and quotations.

Shell Chemical is your  
dependable source of—

Acetone  
Mesityl Oxide  
Methyl Ethyl Ketone  
Methyl Isobutyl Ketone

Ethyl Amyl Ketone  
Ethyl Alcohol  
Neosol®

Isopropyl Alcohol  
Hexylene Glycol  
Methyl Isobutyl Carbinol

Diacetone Alcohol  
Secondary Butyl Alcohol  
Isopropyl Ether

**SHELL CHEMICAL CORPORATION**  
CHEMICAL SALES DIVISION, 380 Madison Avenue, New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis  
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver



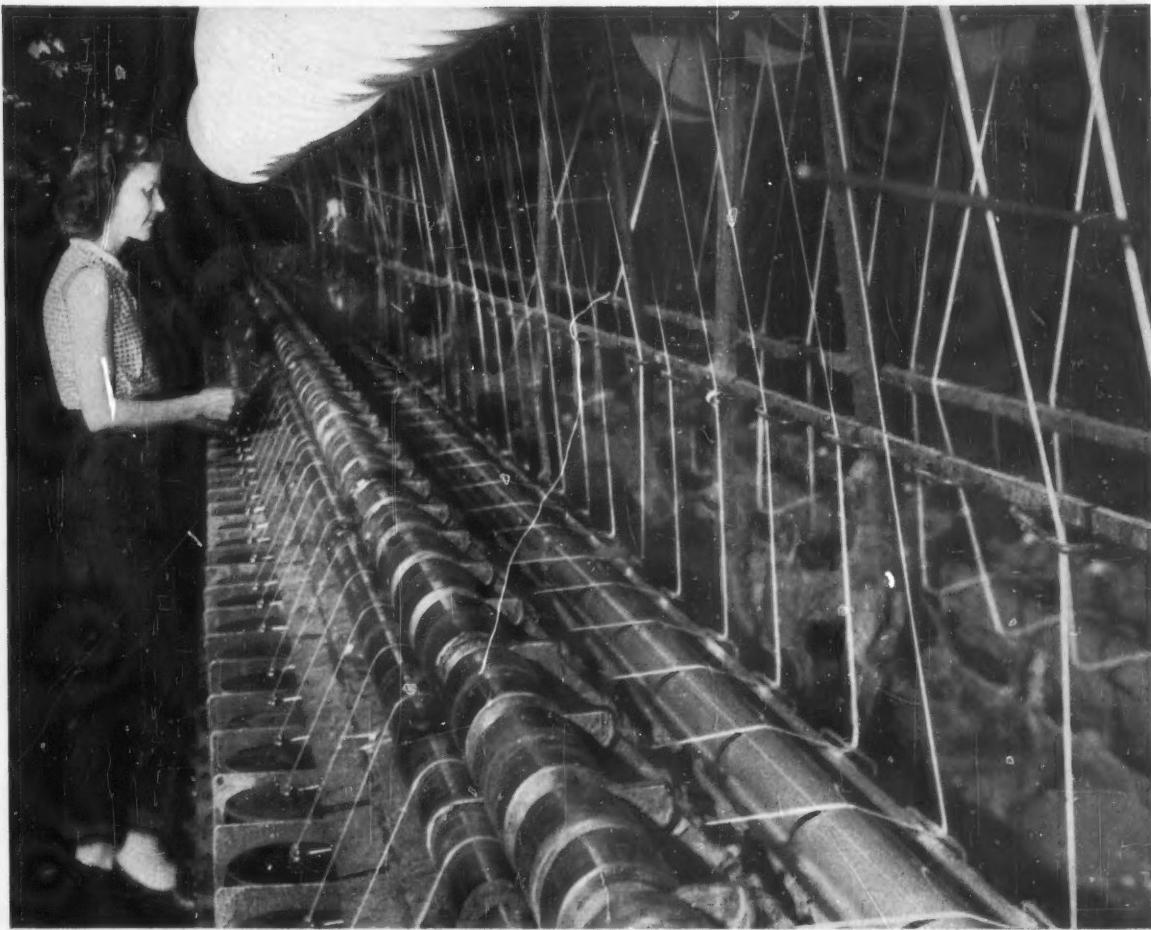
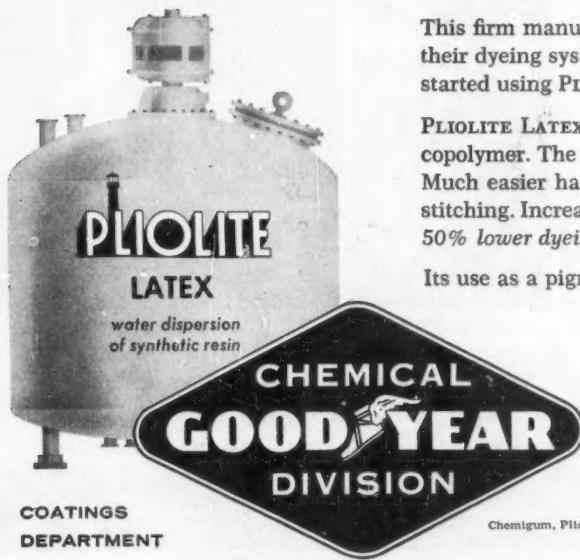


Photo courtesy Lone Star Bag and Bagging Company, Houston, Texas

## Here's Lower Cost—In the Bag!



This firm manufactures paper leno fabric for bagging. Until recently their dyeing system left more than a little to be desired. But then they started using PLIOLITE LATEX as the binder.

PLIOLITE LATEX is a colloidal dispersion of a high-styrene-butadiene copolymer. The results of its use on the leno were beyond expectation: Much easier handling. Greatly reduced crocking. Less rejects during stitching. Increased water resistance. Higher strength bags. And almost 50% lower dyeing costs.

Its use as a pigment binder is only one of several for PLIOLITE LATEX in the paper industry. Along with other water-borne resins and rubbers by Goodyear, it is bringing about major improvements in coatings, impregnants, inks and adhesives. For details plus the latest *Tech Book Bulletins*, write to: Goodyear, Chemical Division, Akron 16, Ohio.

Chemigum, Plioflex, Pliolite, Plio-Tuf, Plivic—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

CHEMIGUM • PLIOFLEX • PLIOLITE • PLIO-TUF • PLIVIC • WING-CHEMICALS  
High Polymer Resins, Rubbers, Latices and Related Chemicals for the Process Industries



# SODA ASH... better because

*it dissolves instantly!*

The pictures tell the story. We remind you here that solutions of WESTVACO Soda Ash also average 94% transmittancy value on the Fisher Electrophotometer (distilled water: 100).

Being clear, colorless and chemically pure, they are especially suited for use in organic chemical, pulp and paper, and detergent manufacturing, water treatment, textile processing and a long list of other soda ash uses.

Without exception users of WESTVACO Soda Ash have been highly pleased with its physical properties and chemical purity. If you use soda ash anywhere in the area bounded roughly by the Mississippi Valley, the Panhandle and the Pacific, you should be using WESTVACO Soda Ash.

We'd like to help you do just that.



ORDINARY SODA ASH      WESTVACO SODA ASH



**Westvaco Chlor-Alkali Division**  
**FOOD MACHINERY AND CHEMICAL CORPORATION**

161 E. 42nd St., New York 17 • Chicago St. Louis Denver Philadelphia So. Charleston, W. Va.

FMC CHEMICALS INCLUDE: BECCO Peroxygen Chemicals • WESTVACO Alkalies, Chlorinated Chemicals and Carbon Bisulfide • NIAGARA Insecticides, Fungicides and Industrial Sulphur • OHIO-APEX Plasticizers and Chemicals FAIRFIELD Pesticide Compounds and Organic Chemicals • WESTVACO Phosphates, Barium and Magnesium Chemicals

# Chemical Week

TOP OF THE WEEK

July 7, 1956

Here's what you need to know about the broadened federal water pollution control law passed by Congress last week ..... p. 21

Rohm & Haas loses a big round in its fight to keep other firms from selling nabam as a fungicide ..... p. 34

Drug firms try a new sales tool: company-sponsored medical newspapers to keep doctors abreast of developments in their own profession ..... p. 46

Novel steel and resin 'sandwich' may help thermal diffusion find new jobs ..... p. 52

## 9 BUSINESS NEWSLETTER

## 16 OPINION

## 16 UPCOMING MEETINGS

## 19 BUSINESS NEWS

Here's what the labor negotiations in steel mean to the chemical industry

20 Alcoa's multimillionaire board chairman diversifies into chemicals

Du Pont-CIL battle over peroxide highlights their resurgent competitive race

## 22 WASHINGTON ANGLES

## 27 CHARTING BUSINESS

## 30 ADMINISTRATION

Sparking Brazil's chemical buildup: dollar shortage, new petrochemical plants

## 44 SALES

For help in planning your future product line, try 'grid' concept, risk-reward theory

## 52 PRODUCTION

56 Olin Mathieson introduces new nonflammable hydrazine for use in high-pressure boilers

## 61 TECHNOLOGY NEWSLETTER

## 64 SPECIALTIES

Study of specialties failures can teach you ways to strengthen your own firm

70 New Census of Manufactures shows sagging soap industry

## 72 MARKETS

Big increases expected in Mexican sulfur output by '58 will hurt U. S. producers and exporters

## 79 MARKET NEWSLETTER

## 82 RESEARCH

Professional unions step up attempts to recruit research scientists

84 Eastman develops new polymeric plasticizer based on neopentyl glycol

High-strength, low-damping alloy unveiled by Westinghouse



## IS YOUR PRODUCT PLEASING ...ODORWISE?

Many products are offered today whose sales appeal would be improved by proper odor control. (Neutralization of characteristic odor or addition of a positive selling scent).

Experienced technicians in the precise control of odor, approach your problem individually to develop a VANDOR material, tailored to treat the odor causing components of your product.

With natural rubber, vinyl and the other synthetics, VANDOR components give effective results for the life of the manufactured item at minimum cost.

Evaluation, technical recommendation and samples at no obligation. Send a sample or description of your odor problem.

**VANDOR**   
*odor control materials*

van Ameringen-Haebler, Inc.  
521 West 57th Street  
New York 19, N. Y.

# 11 ALL-IMPORTANT FACTORS WHICH DETERMINE THE VALUE AND EFFICIENCY OF PROCESSING FURNACES

- ✓ **UNIFORM HEAT DISTRIBUTION**
- MAXIMUM FUEL EFFICIENCY**
- PLENUM CHAMBERS FOR HAZARDOUS AREAS**
- SIMPLICITY OF DESIGN AND CONSTRUCTION**
- EXCESS DRAFT FOR HIGH OVERLOAD**
- EXPLOSION RESISTANT**
- MINIMUM GROUND SPACE**
- SHORT LENGTH OF LIQUID TRAVEL**
- ZERO AIR LEAKAGE**
- LOW PRESSURE DROP**
- LOW MAINTENANCE**

✓ **UNIFORM HEAT DISTRIBUTION** the most desirable heater characteristic is created in an Iso-Flow furnace by:

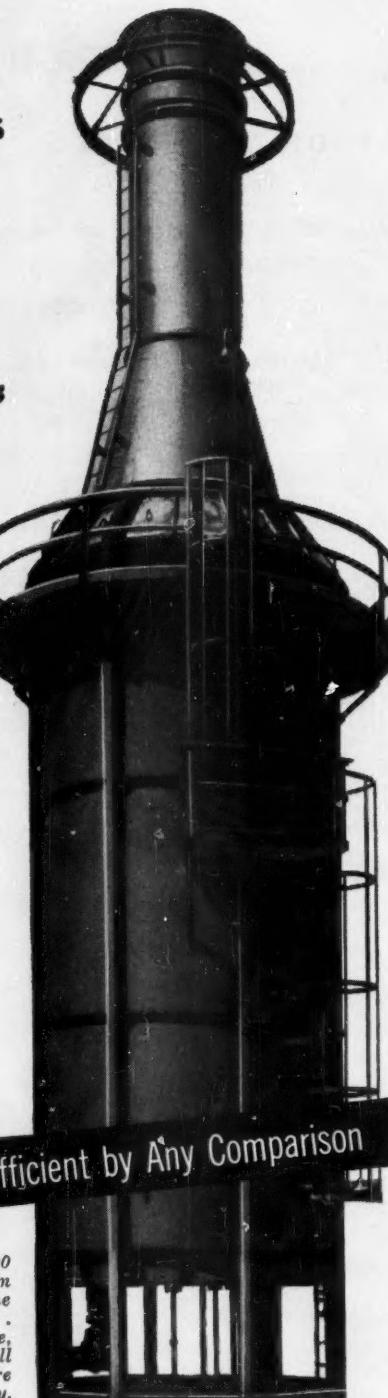
1. Individual burners are so spaced in relationship to the heating elements that they create a symmetrical flame pattern with relation to the tubes;
2. The metal cone at the top of the combustion chamber re-radiates to the tubes, also diverts combustion gases progressively closer to the tubes to give a uniform heat intensity at the upper portion of the combustion chamber;
3. The combustion gases, at the top of the heater, are diverted towards the walls where they recirculate from the top of the heater downward, behind and between the tubes, increasing the heat input to the rear of the heating elements by convection;
4. The recirculated gases reduce the heat intensity at the bottom of the furnace so that the heat input is the same, top and bottom.

*These factors provide the completely uniform heat distribution required in heaters for the most efficient process operation.*

*In every case where these 11 all-important design characteristics were employed to compare one type of furnace design with another, PETROCHEM-ISOFLOW FURNACES were proved most efficient by any comparison.*

Prove PETROCHEM-ISOFLOW FURNACES Most Efficient by Any Comparison

More than 1200 PETROCHEM-ISOFLOW FURNACES are in operation throughout the world in the petroleum, chemical and allied industries . . . for all processes and for any duty, pressure, temperature and efficiency . . . and all Petrochem-Isoflow Furnaces are pre-eminently satisfactory.



## PETROCHEM-ISOFLOW FURNACES

UNLIMITED IN SIZE . . . CAPACITY . . . DUTY

PETRO-CHEM DEVELOPMENT CO., INC. • 122 EAST 42nd St., New York 17, N. Y.

REPRESENTATIVES:

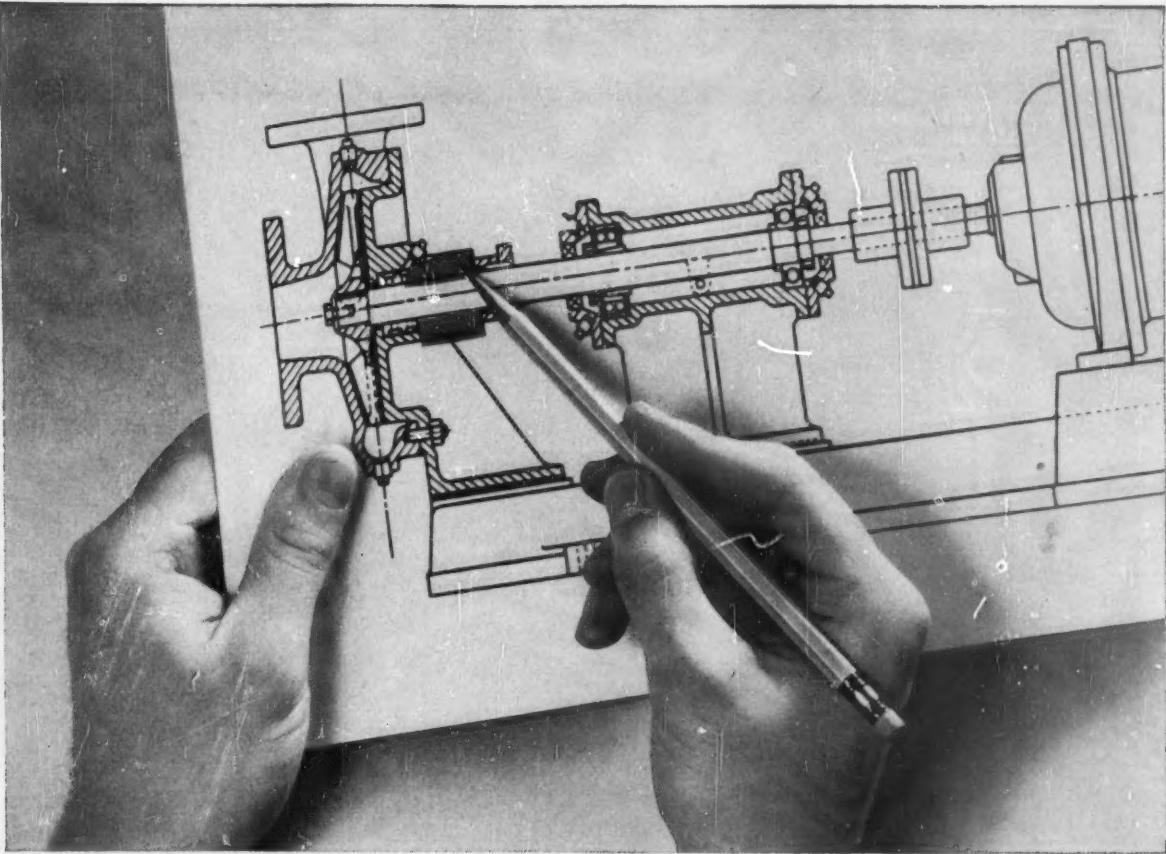
Rawson & Co., Houston • Wm. H. Mason Co., Tulsa • Lester Oberholz, Los Angeles • Faville-Levally, Chicago • D. D. Foster, Pittsburgh • Turbex, Philadelphia • Flagg, Brackett & Durgin, Boston • G. M. Wallace & Co., Denver & Salt Lake City

International Licensees and Representatives: SETEA-S.A. Comercial, Industrial, y de Estudios Tecnicos, Buenos Aires, Argentine •

Industrial Preveedora, Caracas, Venezuela • Societe Anonyme Huertley, Paris, France • Societe Anonyme Belge, Liege, Belgium • Huertley

Italana S.P.A., Milan, Italy • Birwelco Ltd., Birmingham, England





## Here's how Du Pont TEFLO<sup>®</sup> can cut maintenance costs—reduce downtime

In operations where maintenance is extremely difficult, Du Pont TEFLO<sup>®</sup> tetrafluoroethylene resin frequently is the only material able to solve the problem.

The pump in the drawing above is one of many in a plant handling chlorinated benzol. When ordinary packing materials were used, these pumps needed constant repacking, which meant high maintenance costs and production losses. Thirty months ago, packings of Du Pont TEFLO<sup>®</sup> were installed and they are still operating efficiently. The

result has been a saving, in maintenance alone, of \$580 per year on each pump.

The unique properties of TEFLO<sup>®</sup> make such successes possible. The extremely low coefficient of friction of TEFLO<sup>®</sup>—as low as .04—makes it perfect for mechanical seals as well as packings and gaskets. TEFLO<sup>®</sup> can resist continuous temperatures of as high as 500°F. and as low as -450°F., always remaining tough and flexible. TEFLO<sup>®</sup> tetrafluoroethylene resin is inert to

nearly all chemicals and solvents normally used in commercial practices. An exception to this is metallic sodium and the other alkali metals. At elevated temperatures and pressures, halogens and certain halogenated chemicals and solvents may affect TEFLO<sup>®</sup>.

Whatever your operation, you should investigate the possibility of using TEFLO<sup>®</sup>. If you have a problem, it may be the only solution. But, problem or not, the use of TEFLO<sup>®</sup> will surely provide greater operating efficiency.

**ZYTEL<sup>®</sup>**  
nylon  
resin

**LUCITE<sup>®</sup>**  
acrylic  
resin

**ALATHON<sup>®</sup>**  
polyethylene  
resin

**TEFLON<sup>®</sup>**  
tetrafluoro-  
ethylene resin



REG. U. S. PAT. OFF

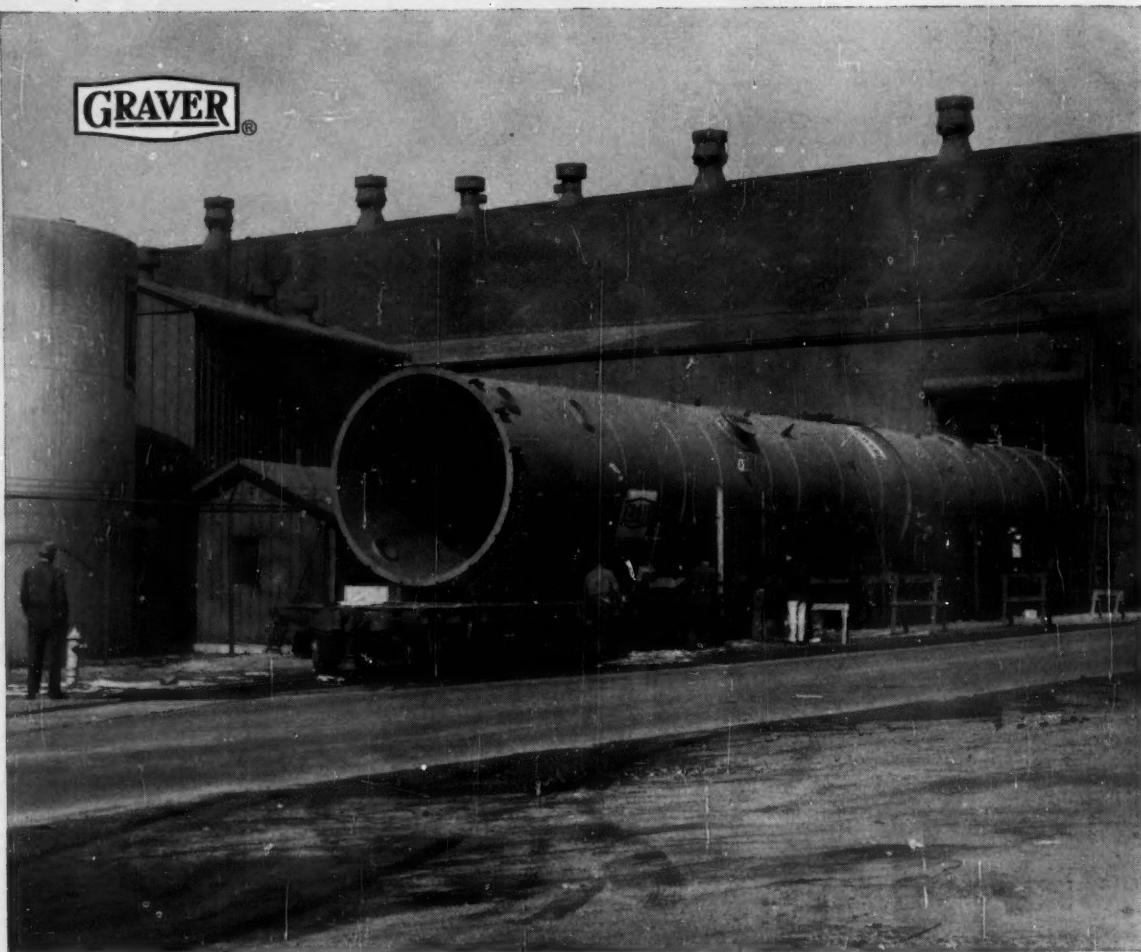
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department  
Room 757 Du Pont Building, Wilmington 98, Delaware  
In Canada: Du Pont Company of Canada Limited, P.O. Box 660, Montreal, Quebec

### SEND FOR FREE DETAILS

Complete property and application data are available to you without cost or obligation. Clip and mail this coupon and it will be on its way to you.

Name _____	State _____
Firm Name _____	
Position _____	
Type of Business _____	
Street Address _____	
City _____	



## *A Fractionator tower for the West*

It's nosing out of the Graver plant at East Chicago—all 93 feet of it—on its circuitously routed journey to a western refinery.

Graver will design and build your complex process fabrications of carbon steel or alloy—stainless, stainless-clad, nickel-clad, Monel, Hastelloy or aluminum. Graver

quality is assured by every modern technique for manual and automatic welding, stress relieving, heat treating, X-raying and other methods of inspection.

For the very best in custom-built process equipment and its installation, call on the experience of Graver.

**GRAVER TANK & MFG. CO., INC.**

East Chicago, Indiana

CHICAGO • NEW YORK • PHILADELPHIA • EDGE MOOR, DEL. • PITTSBURGH • DETROIT • TULSA  
SAND SPRINGS, OKLA. • HOUSTON • LOS ANGELES • FONTANA, CAL. • SAN FRANCISCO

**GRAVER**

Autoclaves  
Digesters  
Elevated  
water tanks  
Oil field  
equipment  
Pressure  
vessels  
Storage tanks  
Towers ✓  
Weldments

# the fleet grows!



We have just added 55 new tank cars to the Frontier Chemical fleet. Our total of cars at your service now ranges respectably into the hundreds. Not the largest fleet on the rails, of course. But — backed by close followup of each car, and prompt shipment over uncongested routes from our strategic plant locations — it spells faster deliveries to you . . . and cost-cutting reductions in your chemical stockpiles. Here's a typical aspect of service in the Frontier spirit — friendly, helpful, and backed by all the resources necessary to meet your needs. For off-rail locations, Frontier's truck fleet is always at your call. We shall welcome an opportunity to serve you.

producers of caustic soda (liquid, flake,  
solid) • muriatic acid • chlorine •  
99% pure salt (fine grain or briquette)

DIVISION OF UNION CHEMICAL & MATERIALS CORP.

GENERAL OFFICES  
MUNICIPAL AIRPORT  
WICHITA, KANSAS

WICHITA, KANSAS • DENVER CITY, TEXAS • DUMAS, TEXAS • MIDLAND, TEXAS



DESIGNING  
ENGINEERS  
AND  
CONSTRUCTORS

# LUMMUS

FOR THE  
PETROLEUM  
AND CHEMICAL  
INDUSTRIES

385 MADISON AVENUE, NEW YORK 17, NEW YORK

# First High Pressure Acetylene Chemicals Plant In U.S. Now In Operation

**Plant Built By Lummus For  
General Aniline & Film  
Corporation At Calvert  
City, Kentucky Has Been  
Operating Smoothly  
Since Startup**

Early in 1956 the first full scale commercial installation in this country for the production of acetylene chemicals by high pressure techniques was placed in operation at Calvert City, Kentucky. It was engineered and constructed by The Lummus Company based on General Aniline & Film Corporation's design. GAF is the pioneer of high pressure acetylene technology in this country.

The chemicals presently manufactured include propargyl alcohol, butynediol, 1,4-butanediol, butyrolactone, pyrrolidone, vinylpyrrolidone, polyvinylpyrrolidone (PVP).

As a result of extensive research, pilot plant production and market development by GAF, these products already have wide acceptance industrially for use in cosmetics, pharmaceuticals, detergents, plastics and plasticizers, fibers, textile auxiliaries, solvents, corrosion inhibitors and germicides. With full scale commercial production now under way, industry will be able to obtain these materials at new low prices and in multi-million pound quantities.

The engineering and construction of this new and unusual pro-

cessing plant required the closest cooperation between GAF and Lummus personnel at all levels, and it proceeded smoothly through a successful startup.

This project is one more indication of the ability of The Lummus Company to handle challenging installations for the chemical process industries. Look to Lummus when you have a unique engineering and construction problem.

**THE LUMMUS COMPANY,**  
385 Madison Avenue, New York  
17, N. Y. **Engineering and Sales**  
**Offices:** New York, Houston,  
Montreal, London, Paris, The  
Hague, Bombay. **Sales Offices:**  
Chicago, Caracas. **Heat Exchanger**  
**Plant:** Honesdale, Pennsylvania.  
**Fabricated Piping Plant:** East  
Chicago, Indiana.



# Business Newsletter

CHEMICAL WEEK  
July 7, 1956

Look at steel in the framework of the big economic picture. If you look at the strike by itself, you can get a distorted view of what it means to your company's operations.

In the first place, the strike probably won't touch off a general business downturn. There's general agreement on this among economists on Wall Street and—even more noticeably—in Washington. In fact, top Administration economists are almost as cheerful in private as their bosses are in public.

The official Eisenhower line, as exemplified at the news conference last Friday of Commerce Secretary Weeks, is quite optimistic. And even Treasury Secretary Humphrey, who had felt inflation-curbing action wasn't needed back in April, now says that there is a need to check the economy's exuberance.

Privately, top economists admit there are some soft spots in the economy. But while they have been worried that these might touch off a downturn, just in the past two weeks they've changed their minds; they now feel that the soft spots are not going to spread.

And you can be sure they wouldn't have changed signals if they felt that a steel strike would really hurt U. S. business.

Of course, the steel strike will mean a downturn in production in the hard goods industries, in chemicals (see p. 19), and in industry generally. But remember that since early this year people have been buying steel—and, to a lesser extent, coal-tar chemicals—in anticipation of a strike. The strike will allow a rapid consumption of these inventories. (There are even a few people who look at the strike as a blessing in disguise—because it will clear these supply channels.)

A strike lasting longer than three to four weeks is unlikely because there's too big a demand for steel—and too much money to be made in the business, especially with almost inevitable higher prices—for steelmakers to stay out of production any longer.

Look for a strong fourth-quarter pickup in chemical sales following a sales dip in the third quarter. That's the midyear prediction of the Chemical and Rubber Division of the Commerce Dept.'s Business Defense Services Administration, which was made public by Secretary Weeks last Friday. Any third-quarter dip would be caused by reduced activity in some industrial areas that make extensive use of chemicals—but the increased activity in the last quarter should bring six months sales to \$11.6 billion—about equal to sales of the first half of '56 as well as those of the second half of '55.

The probe of Syntex, S.A., and its alleged cartel activities, begins this week in Washington. The hearings (*CW Business Newsletter, June 9*) have been called by a Senate judiciary subcommittee to see whether Syntex has violated U.S. law in its alleged attempts to monopolize production of steroids from the Mexican barbasco root. The first witnesses this Thursday and Friday

## **Business Newsletter**

(Continued)

will outline the general steroid supply-demand picture to give Subcommittee Chairman Joseph O'Mahoney (D., Wyo.) and fellow senators a frame of reference for later testimony that will specifically concern Syntex.

**Terms of the West End-Stauffer merger have been approved** by both companies' directors. As soon as legal formalities are completed, the boards will recommend merger to stockholders. Proposed terms: one share of Stauffer common stock for 5.6 shares of West End common—one share of Stauffer common for 60 shares of West End preferred—excluding all shares of West End stock now held by Stauffer, which would be cancelled. West End would operate as an autonomous Stauffer division—much as does Stauffer's recently acquired Consolidated Chemical Industries Division.

Is the price high enough to placate the minority West End stockholders who formed an opposition stockholders committee (*CW Business Newsletter, May 19*)? No—but committee members feel it's high enough that they have no chance of defeating the merger either in the stockholder vote or in court.

**Another merger involving mineral producers has gone through.** At a special meeting last Friday, stockholders of U.S. Potash voted to approve the merger of their firm into Pacific Coast Borax (*CW, May 12, p. 20*), effective as soon as papers are filed with state authorities. Name of the surviving corporation: U.S. Borax and Chemical Corp.

**Two votes last week on Louisiana's sulfur tax** rebuffed Gov. Earl Long's efforts to increase that levy. A proposal to boost the present \$1.03 tax to \$2.75/ton was defeated by a seven-vote margin; a rise to \$2/ton was defeated by four votes. Under rules of Louisiana's House of Representatives, this sends the matter back to committee—probably killing any such tax increase for the current session.

**Rayonier is hoping to refute charges** that its Shelton, Wash., pulp mill is polluting the waters of lower Puget Sound. It has commissioned the Academy of Natural Science of Philadelphia to begin a study of problems of the area's oyster growers, who feel (*CW Business Newsletter, June 30*) that their oysters are being killed by sulfite discharges from the Shelton plant.

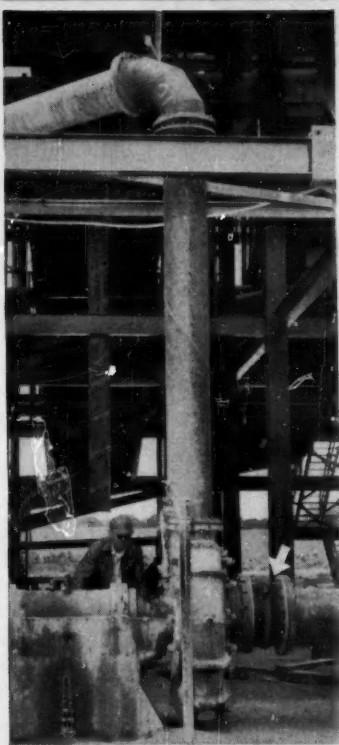
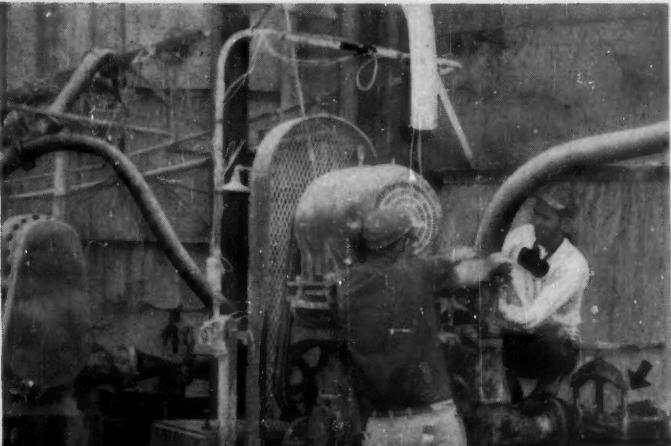
**Cause of an explosion at Sylvania's Long Island labs** this Monday is still undetermined. The blast, which occurred in the atomic energy section of the company's metallurgical research laboratories at Bayside, L.I., was apparently of chemical, rather than nuclear, origin. Four employees were hospitalized, five others received first-aid treatment.

**Is Filtrol Corp. about to be acquired by another company?** The rumor, long current in industry, gains new impetus as the company's stock has shown a 20-point rise (to about 90) in the past three weeks.

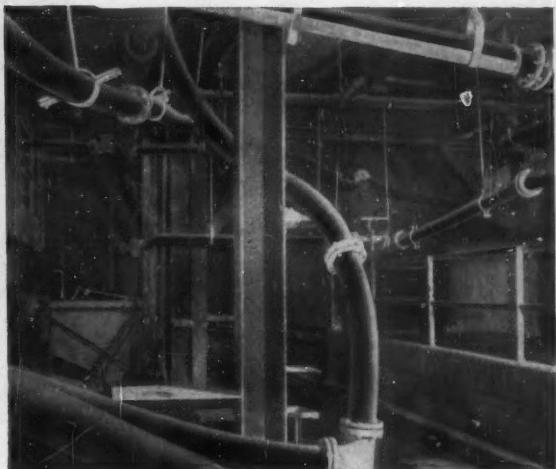
Among the companies said to be interested in the acquisition: National Lead and Dow Chemical.

# "WE DON'T HAVE TIME TO CODDL PIPING OR VALVES— SO WE USE U. S. RUBBER PRODUCTS..."

says production official of  
phosphate chemical plant



The U. S. Rubber Pilot pinch valve (arrow) connects to the big tank in the background (with U. S. Giant Acid Hose at right) and serves to control the flow of acid, gypsum and solids to the digester tank, from the pump.



U. S. Rubber Pilot pipe, dominates this picture of slurry tanks for first stage filters. Note also U. S. Acid Hose.

This large plant in Florida operates 24 hours a day, 7 days a week, making fertilizer and animal food supplements. Corrosive acids, (phosphoric and sulphuric) flow freely, and without damage, through U. S. Rubber Giant® Acid Hose. "Metal hose would clog, corrode and crack," says the production official of the plant. "We also use U. S. Rubber Pilot® Pinch Valves—because they don't clog, freeze or need to be babied like metal valves."

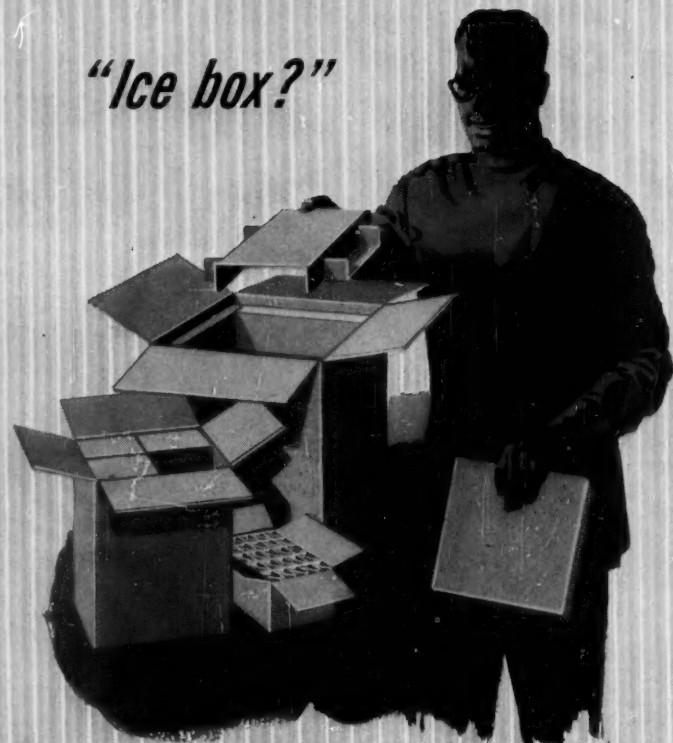
This plant also uses U. S. Expansion Joints and U. S. Pilot Pipe and U. S. Giant Acid Hose to control, pipe, pump and convey the flowing semi-solid acids. All of these products are easy to install, easy to clean and maintain. The plant's officials have found that U. S. Rubber products are unmatched in facilitating production and in reducing maintenance and equipment charges. They have standardized on "U. S." products. It will pay you to take any and all corrosion problems to a "U. S." specialist. Get in touch with any of our 28 District Sales Offices, or write Mechanical Goods Division, United States Rubber, Rockefeller Center, New York 20, N. Y.



Mechanical Goods Division

# United States Rubber

**"Ice box?"**



Four hundred vaccine ampuls stay  
Insulpak® cool and cushioned in this  
corrugated shipper with a dry ice compartment.  
Packing is quick, shipping safer. What's your  
package problem? H & D can solve it.



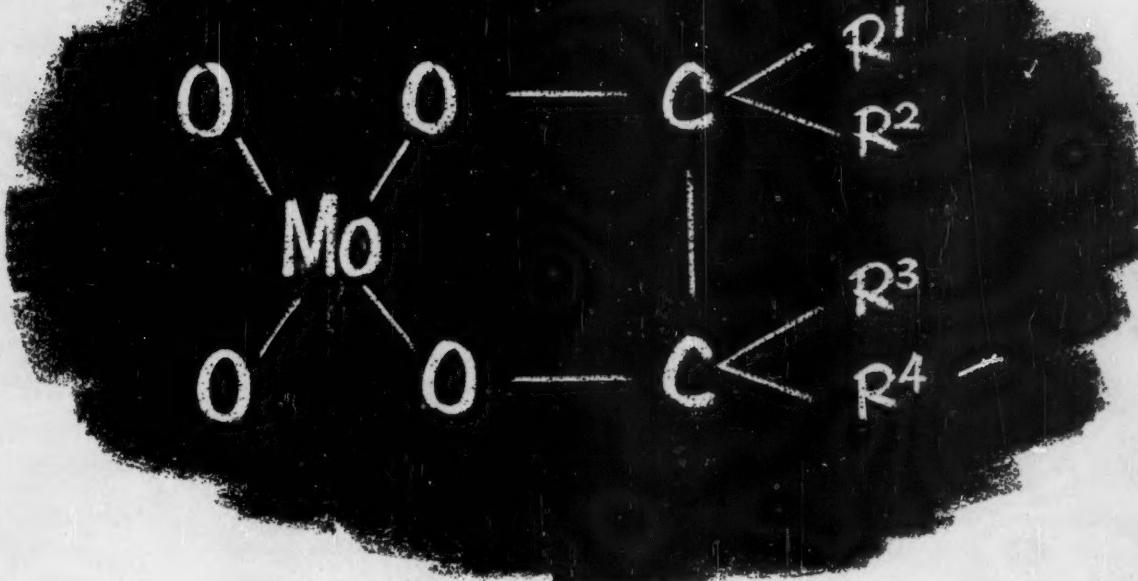
**HINDE & DAUCH**

Subsidiary of West Virginia Pulp and Paper Company

AUTHORITY ON PACKAGING • SANDUSKY, OHIO  
13 FACTORIES • 40 SALES OFFICES\*

# MOLYBDIC OXIDE

—key to new family of  
organic chelates



Molybdc oxide,  $\text{MoO}_3$ , and the related molybdates,  $\text{R}_2\text{MoO}_4$ , form chelates or complexes with many organic oxygen, sulfur and nitrogen compounds. Among these are:

**Polybasic acids**

**Polyalcohols**

**Polyphenols**

**Thiophenols**

**Xanthates**

**$\beta$ -diketones**

**Aromatic bases**

**Amines**

Each of these classes of compounds forms a number of complexes with varying properties. For example, oxalic acid forms complexes with molybdenum in the +3, +4, +5 and +6 valence states. Some typical properties of these oxalates are described at right.

**Mo<sup>III</sup> oxalates** are non-ionic. Examples are the water-soluble  $\text{Mo}_2\text{O}(\text{C}_2\text{O}_4)_2 \cdot 6\text{H}_2\text{O}$  and the insoluble  $\text{Mo}_4\text{O}_5(\text{C}_2\text{O}_4)_3 \cdot 12\text{H}_2\text{O}$ .

**Mo<sup>IV</sup> oxalates** are both ionic and non-ionic. Ionic complexes of the type  $\text{R}_2\text{Mo}_3\text{O}_4(\text{C}_2\text{O}_4)_3 \cdot 2\text{H}_2\text{O}$  are strong reducing agents. They are red in acid solution, blue in alkaline. Among non-ionic complexes are the purple  $\text{Mo}_5\text{O}_6(\text{C}_2\text{O}_4)_4$  and the brown  $\text{Mo}_4\text{O}_5(\text{C}_2\text{O}_4)_3 \cdot 10\text{H}_2\text{O}$ , both soluble in water but insoluble in organic solvents.

**Mo<sup>V</sup> oxalates** are highly colored. Salts of the type  $\text{RMoO}_3(\text{C}_2\text{O}_4) \cdot \text{H}_2\text{O}$  are red in concentrated water solution, but turn yellow on dilution. Mineral acids convert them to other highly colored compounds; for example HCl yields green complexes of the type  $\text{R}_2(\text{MoOCl}_5)$ . Other Mo<sup>V</sup> complexes include the orange  $(\text{C}_5\text{H}_5\text{N})\text{H}\text{-MoO}_4\text{O}_5(\text{C}_2\text{O}_4)_4 \cdot 6\text{H}_2\text{O}$ , the red  $\text{KMoO}_2(\text{C}_2\text{O}_4)_3 \cdot \text{H}_2\text{O}$ , and the yellow  $(\text{C}_5\text{H}_5\text{N})\text{MoO}_2(\text{C}_2\text{O}_4)_3 \cdot \text{H}_2\text{O}$  and  $\text{Mo}_2\text{O}_3(\text{C}_2\text{O}_4)_2 \cdot 4\text{H}_2\text{O}$ .

**Mo<sup>VI</sup> oxalates** are water soluble, but their amine salts are not. These complexes are apparently ionic.

Can you use these chelating powers of molybdenum? They are discussed more fully in a new bulletin, "Organic Complexes of Molybdenum". Write for it and for samples of molybdc oxide or sodium molybdate to Climax Molybdenum Company, Dept. 28, 500 Fifth Avenue, New York 36, N.Y.

## CLIMAX MOLYBDENUM



Use the  
Moly key  
to creative  
chemistry

- catalyzes
- polymerizes
- oxidizes
- reduces
- precipitates
- solviliates
- chelates



## "Still glad you came to work for Pritchard, Howard?"

"I'm more pleased than ever—if that's possible. You know what happened today, up in the chemical division?"

"What?"

"We wrapped up the plans for a dry ice plant. It's going to be a beauty when we get it built. I've never seen such teamwork before."

"What do you mean by 'teamwork,' Howard?"

"The way the designers and engineers all work together toward the same goal. It's all a matter of cooperation. Each group that works on the project, is a specialist in its own field and all work closely with the client's own personnel."

"That's the way it has to be, Howard. We learned that philosophy many years ago. Experience and knowledge are only as good as the cooperation that goes into putting them together."

"That's another thing that amazes me. The knowledge our people possess. It doesn't make a bit of difference what kind of facilities our clients want—fractional distillation, absorption, evaporation, crystallization, filtration, heat transfer, our people know how to build it."

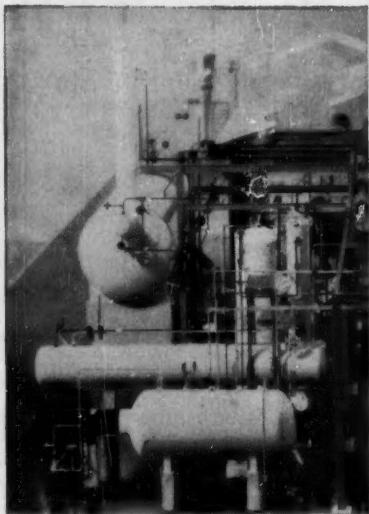
"I know how you feel. I went through it myself twenty years ago when I started out at Pritchard. It's a great feeling, too! Can I give you a ride home?"

J. F. PRITCHARD & CO.  
4625 Roanoke Parkway, Kansas City 12, Mo.



"Still glad you came to work for Pritchard, Howard?"

## Remember Pritchard When You Build or Expand



Experienced Pritchard designers and engineers, as well as construction superintendents, are ready and eager to serve you.

Whether you choose Pritchard as a major contractor or for specialized processes, you can be sure of this: no installation, large or small, fails to receive an extra measure of ability and cooperation from Pritchard personnel. The dry ice plant, model of which is illustrated above, is a typical example of Pritchard's specialized ability.

So, remember Pritchard the next time you build, expand or modernize.

### YOUR SPECIFIC INQUIRY IS INVITED

INDUSTRY'S PARTNER FOR PROGRESS

**J.F. Pritchard & Co.**  
ENGINEERS • CONTRACTORS  
Dept. 531, 4625 Roanoke Parkway  
Kansas City 12, Mo.

SERVING THE GAS, POWER, PETROLEUM AND CHEMICAL INDUSTRIES  
BOSTON, CHICAGO, BUFFALO, HOUSTON, NEW YORK, PITTSBURGH

# Chemical Week

July 7, 1956

Vol. 79, No. 1

Publisher .....	Wallace F. Traendly
Editorial Director .....	Sidney D. Kirkpatrick
Editor .....	Howard C. E. Johnson
Associate Managing Editors .....	Ralph R. Schulz Edward T. Thompson

### ASSOCIATE EDITORS

Marketing .....	Anthony J. Piombino
Technology .....	Donald P. Burke

### DEPARTMENTS

Administration .....	Homer Starr, editor; Leo J. Northart
Business News .....	William Olcott, editor; Cooper McCarthy Robert L. Porter
Marketing	
Markets .....	Jorma Hyppia, editor
Sales .....	John M. Winton, editor; Richard J. Callahan
Reports .....	Vincent L. Marsilia, editor
Specialties .....	J. R. Warren, editor; Charles Joslin
Technology	
Production .....	Kenneth Wilsey, editor; Herbert C. Short
Research .....	Joseph F. Kalina, editor; Emil J. Mikity
Copy .....	William Mullinack, editor
Art .....	Donald R. Thayer, director; Peter Madden
Buyers' Guide .....	Alvin J. Babbow, manager

### REGIONAL EDITORS

Midwest .....	Frank C. Byrnes, Chicago
Far West .....	Elliot Schrier, San Francisco
Southwest .....	James A. Lee, Houston

### EDITORIAL ASSISTANTS

Magnhild Lovaa	Kay Sebiry
Eleanor Sternecker	Frances Regan

### NATIONAL NEWS

Economics .....	Dexter M. Keezer, director Douglas Greenwald, Robert P. Ulin
Atlanta .....	A. R. Henry
Cleveland .....	Robert E. Cochran
Detroit .....	Harry Homewood
Los Angeles .....	John Shinn
San Francisco .....	MargaretRalston
Washington .....	George B. Bryant, Jr.

Correspondents in 73 principal cities.

### WORLD NEWS

Editor .....	John Wilhelm
Bonn .....	Gerald W. Schroder
London .....	William J. Coughlin
Melbourne .....	Alicia Grobtsch
Mexico City .....	John H. Kearney
Paris .....	Robert E. Farrell
Rio de Janeiro .....	Peter Weaver
Tokyo .....	Dan Kurzman

Correspondents in 44 principal cities.



Advertising Director .....

Robert S. Muller

Advertising Sales Manager .....	Steven J. Shaw
Business Manager .....	Anton J. Mangold
Advertising Salesmen .....	See page 88

Promotion Manager .....	E. A. Atwood, Jr.
Market Research Manager .....	A. I. Losick
Market Service Manager .....	J. E. Zingale

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), founder. Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Publication Office: 1309 Noble St., Philadelphia 23, Pa. Donald C. McGraw, President; Paul Montgomery, Executive Vice-President; Joseph A. Gannett, Vice-President and Treasurer; John W. H. Johnson, Vice-President; Neilson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Circulation Director.

Subscriptions to Chemical Week are solicited from management men in the chemical process industries. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscriptions Manager, 330 W. 42nd St., New York 36, N.Y., or 1309 Noble St., Philadelphia 23, Pa. Allow one month for change of address.

Single copy, \$5.46. Subscription rates—United States, United States Possessions and Canada, \$3.00 a year; \$4.00 for two years; \$5.00 for three years. Other Western Hemisphere countries, \$15.00 a year; \$25.00 for two years; \$30.00 for three years. All other countries, \$25.00 a year; \$40.00 for two years; \$60.00 for three years.

Second class mail privileges authorized at Philadelphia, Pa. Copyright 1956 by McGraw-Hill Publishing Co., Inc. All rights reserved.

# OPINION

## Polyolefins in Textiles

TO THE EDITOR: Your two reports (*June 16*) on isotactic polyolefins, polypropylene in particular, are a clear presentation of these newer developments; they should be interesting to many, at a time when Prof. G. Natta is visiting in the States to give more detailed information on his methods.

Your first article refers specifically to the potentialities of these polymers in the field of textile fibers, and it is judicious that you draw comparisons with polyethylene. A close relationship exists, indeed, because the method of producing the filaments by melt extrusion and the conditions of their orientation are basically similar, as are many of the properties, such as hydrophobicity, chemical inertness and coloring by pigmentation; subsequent advantages and disadvantages determine or limit the scope of their commercial applications.

We, at Reeves Bros., are primarily textile people, and have been interested for many years in the possibilities of polyethylene filaments. We have spent quite a few research dollars to overcome weaknesses of these filaments as originally produced with the so-called high-pressure or branched polymers, and as a result it was possible to improve the properties to a degree that permitted us to introduce these fibers for several end-uses in the industrial textile field.

Since the beginning of 1956, we and other filament extruders have added to our production lines filaments of the new linear polyethylene. We have investigated both the Phillips- and the Ziegler-type materials . . . The quantities are still small, in comparison with the total polyethylene produced, but they are sufficient to

*CW* welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

## Comparison of Polyolefin Filaments

Filaments	Tensile strength (psi) averages	Tenacity (grams/denier) range	Ultimate elongation (percent) average	Density (grams/cc)	Melting point °C approximate
<b>Polyethylenes</b>					
<b>Conventional, branched</b>					
Regular	15,000	1.0 to 1.5	50	0.92	110
Reevon-type	23,000	2.1 to 2.3	25	0.92	120
<b>Linear</b>					
On the market	75,000	5 to 7	15	0.94 to 0.96	130
To be expected	100,000	8 to 9	10		
<b>Polypropylene</b>					
Isotactic	(110,000)	(9.3)	(31)	0.92	150

develop and to establish markets of these new fibers, because a pound of resin yields many thousand yards of filaments. The advantages of the linear polyethylene over the conventional one are described in your reports; but there are applications of increasing importance for the conventional fibers, and we are actually offering to the trade both types of fibers to make use of the differences in their properties.

It is premature today to predict whether the new polyolefins will have specific advantages to give them a distinct place along with the existing fibers, or whether they will replace the linear polyethylene in this field.

In any event, it seems to me that the table presented on page 65 of your June 16 issue will be of greater value to the readers by incorporating the properties of the different polyethylene filaments already on the market. The old conventional fibers are supplied in two forms: regular and Reevon types. The linear polyethylenes, although still in a state of development, are nevertheless already accepted with definite characteristics for a variety of end-uses such as industrial fabrics and ropes.

It can be seen [*in the table, above*] that one advantage of a polypropylene fiber, Natta's or other's, over the linear polyethylene would be the high softening

and melting range, but other characteristics could play a decisive role in the final evaluation. This entire development is fascinating; however, its real importance in the textile field still remains a matter of conjecture.

VICTOR L. ERLICH  
Director of Research  
Reeves Brothers, Inc.  
New York

## SEE YOU THERE

Society of Chemical Industry, 75th annual meeting, London, England, July 9-14.

Symposium on Synthetic Polymer Chemistry, Notre Dame, Ind., July 16-17.

Virginia Polytechnic Institute, 9th Oak Ridge Regional Symposium, Blacksburg, Va., July 30-31.

National Soybean Processors Assn. and American Soybean Assn., annual meeting, University of Illinois, Urbana, Aug. 13-15.

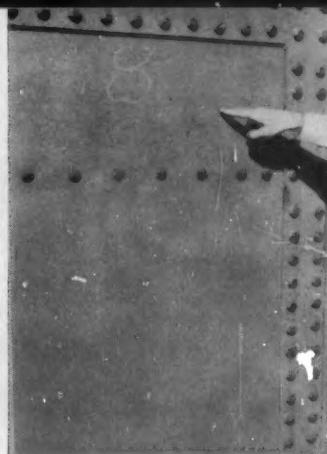
American Institute of Chemical Engineers, meeting, William Penn Hotel, Pittsburgh, Sept. 9-12.

International Congress on Catalysis, meeting, Bellevue-Stratford Hotel, Philadelphia, Sept. 10-14.

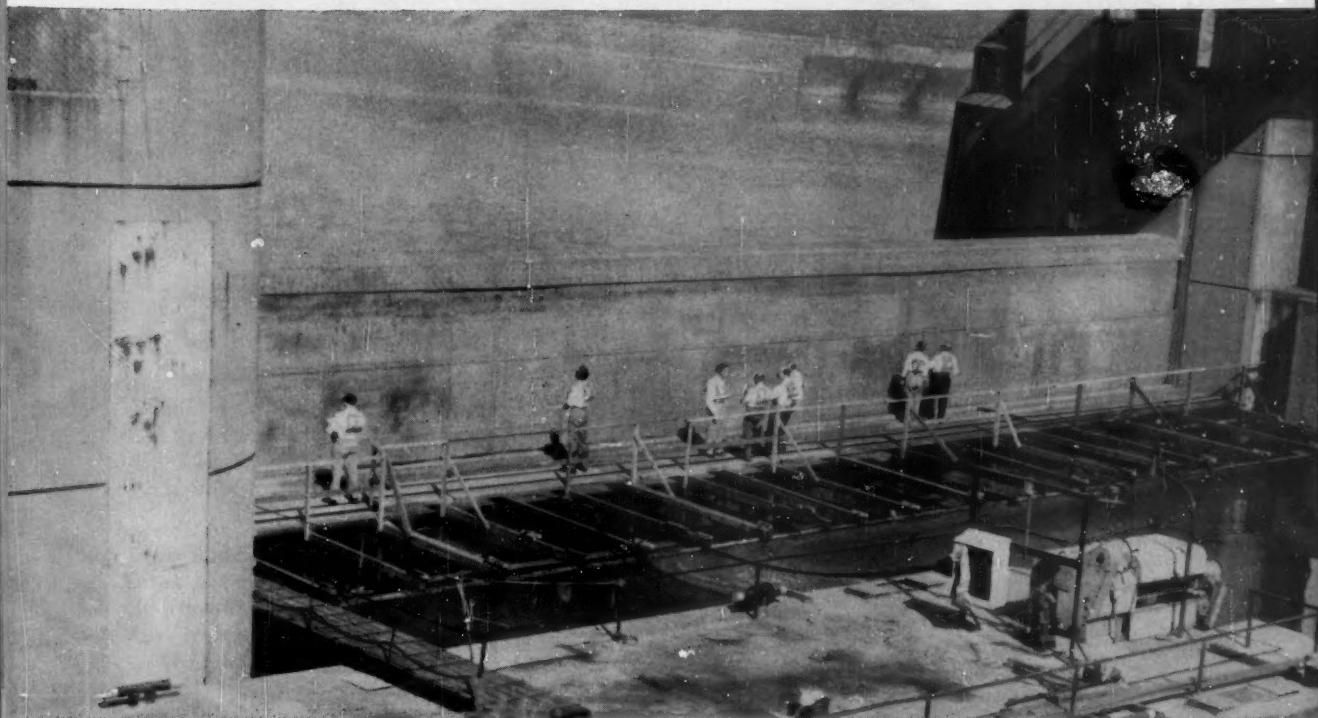
Drug, Chemical and Allied Trades Section of the New York Board of Trade, annual meeting, Pocono Manor, Pa., Sept. 27-30.

## *Vinyl resin based coating for steel work*

# Best in 5-year test!



Close-up of steel test panel shows freedom from corrosion. Coatings used in this test formulated by **Thompson and Company**, Oakmont, Pa.



This outstanding record was made of coatings based on BAKELITE Brand Vinyl Resins. Applied to the upstream side of the lift gate after old paint and rust were removed, a coat of special wash primer was used followed by three coats of aluminum-pigmented Vinyl paint.

To test coatings under actual operating conditions, twenty-five systems were applied to a steel-plate lift gate of the Emsworth Dam on the Ohio River near Pittsburgh. Five years later, 17 impartial and competent observers for industry and Corps of Engineers, U. S. Army, judged a Vinyl Resin based coating best... after nearly constant submersion in river water!

Here is another example of the fine service you can expect with coatings based on BAKELITE Brand Vinyl Resins... for buildings or structures, interior, exterior... for any type of surface... for resistance to acids, alkalies, salt spray, corrosive atmospheres, wear or abrasion.

Write today for further information and a list of suppliers... Dept. QL-34.

**Vinyl, Phenolic, Epoxy, and  
Styrene Resins for Coatings**



**BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation** UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

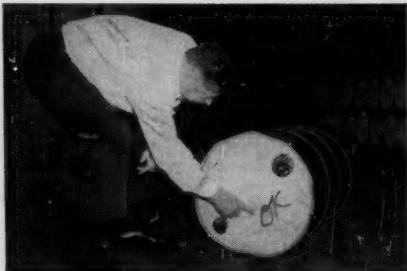
All of these drums in the Pemex storage shed were completely immersed when the Panuco River overflowed.

WHEN TWO HURRICANES HIT TAMPICO...

HIGH WATER MARK

# Sealed drums were kept leak-proof by **Tri-Sure® Closures**

drums were immersed for 6 days



Many drums were badly dented, but the Tri-Sure Closures remained in sound condition.



Free of leakage! After inspection and sampling every one of these Tri-Sure equipped drums was salvaged and re-sealed.

Always specify  
**Tri-Sure**  
Reg. U.S. Pat. Off.  
**CLOSURES**

The Sign of a



Perfect Seal

AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.

CHICAGO, ILL. - NILES, OHIO - LINDEN, N. J.

Tri-Sure Products Limited, St. Catharines, Ontario, Canada

Tri-Sure S/A Indústria e Comércio, São Paulo, Brazil

American Flange & Manufacturing Co. Inc., 31 Macquarie Place, Sydney, Australia

B. Van Leer N. V., Stadhouderskade 6, Amsterdam, Holland

Van Leer Industries, Ltd., Seymour House, 17 Waterloo Place, Pall Mall S.W. 1, London, England

July 7, 1956



STEEL FURNACES go cold as walkout begins, but chemical makers have . . .

## Few Short-Strike Worries

With a few exceptions, chemical industry management isn't showing much concern over the implications of the steel negotiations.

To be sure, most expect some after-effects laborwise—a general pressure for a wage boost—but there's little worry about the possibilities of a lengthy strike or serious materials shortage.

Opinions are varied on the period of time that the steel shutdowns will last. Experienced mediators have said they expect no serious dislocations; but simultaneously, several competent observers of the steel industry claim that issues now before the "Big Three" and the unions are too large to be surmounted quickly.

Nevertheless, 35 diverse chemical firms throughout the country surveyed by CHEMICAL WEEK report that they're in good shape, supply-wise, in both coal-tar chemicals and steel. Generally, they have inventories amounting to two weeks' needs or more.

On steel needs, for example, Macco Chemical Co. (Cleveland) anticipated a strike, set up its construction program to use buildings of concrete and wood. Other firms planning large expansions, including Allied Chemical's

Barrett Division, Sun Oil, Libby-Owens-Ford, feel their contractors can solve whatever problems may arise.

In the chemical line, large users of coal-tar chemicals point out that by and large they've diversified between types of suppliers, use material from both steel producers and petrochemical companies. Thus, barring a lengthy strike of a month or more, they expect petrochemical sources to be able to fill their demands. A Midwestern steel firm says: "No one seems worried about coal tar or creosote, since refiners have built up their inventories and can probably last out well."

In other instances, some chemical firms make their own supplies. Diamond Alkali, for instance, has its own coke ovens, feels it won't experience any problems in getting coal-tar chemicals. Moreover, it even supplies some coal-tar derivatives to the steel industry. Even with the shutdown, it points out, it has an excess supply of some of these chemicals, may be able to make them available to others.

Suppliers of both the automotive industry and the steel industry, such as Harshaw and Wyandotte, point out that they'll be hit from two directions—indirectly from cancellations from the

car makers and directly from orders by steel companies for chemicals used in their pickling process. "However," says Harshaw, "we're diversified enough so that effects would be mild, certainly not great enough to cause any plant shutdowns."

Makers of agricultural chemicals are somewhat concerned over availability of aromatic solvents such as benzol, toluol and xylool, pointing out that this has been an active season for some formulations that use such solvents. Again, however, companies such as Thompson-Hayward in Missouri, mention that petrochemical makers have been doing a good job of supplying their needs.

Union affiliations are proving helpful to some firms, difficult for others. In Pittsburgh, one chemical manufacturer that's almost 100% organized by the United Steelworkers is worrying about a possible sympathy strike. In Birmingham, Ala., on the other hand, chemical firms are getting their coal-tar chemicals largely from companies organized by District 50 of the United Mine Workers, expect no strike problems. In fact, three coal-tar suppliers, U.S. Pipe and Foundry, Alabama By-products Corp. and Koppers, say that production could be stepped up if needed.

**Wage Boosts?** As to wages, companies are pretty generally sure they'll be hit with demands for higher pay as a result of the steel outcome. Those

### Weekly Loss Due to Steel Shutdown

Ammonia Liquor	1,382,000 lbs.
Ammonium Sulfate	38,400,000 lbs.
Benzene	3,750,000 gals.
Naphthalene	11,400,000 lbs.
Toluene	770,000 gals.
Xylene	231,000 gals.
Creosote Oil	174,000 gals.

situated near the heart of steel-making areas, such as Pittsburgh and Birmingham, or near such steel-using areas as Detroit, are expecting such demands very quickly. (This is mitigated to some extent by two-year contracts already signed by some companies with their unions. In addition some larger firms are protected because they deal only locally with bargaining units, need not make sweeping company-wide changes.)

One chemical company in the Midwest, looking to eventual price hikes as an aftermath of the steel negotiations, has decided to wait it out. Says the firm, "Until news of the strike came along, we'd figured on raising prices 6%. Now, if our employees start seeking raises comparable to steel-workers, we'll need a 10% increase."

Generally chemical companies ex-

pect a short strike. For those who supply the steel industry, a long shutdown would hit profit margins fairly hard, would certainly force curtailments. Those who buy from steel companies, though they foresee adequate supplies from petrochemical makers over the short haul, are seriously considering what to do in the event the strike lasts well into the month.

Whatever the settlement may be, chemical management is watching the negotiations closely. For even though worries aren't severe now, long steel shutdowns have caught the industry unawares before, and it could happen again. As the week wore on, many a chemical businessman, anticipating difficult negotiations ahead, was wondering not what the settlement will be, but how long it will take.

## Burgeoning Bleach

Those two Canadian chemical programs—Canadian Industries Ltd. and Du Pont of Canada—set up two years ago as a result of the U.S. antitrust decision that involved joint subsidiaries of Du Pont and Imperial Chemical Industries, are proving to be each other's toughest competitor.

Where they've been skirmishing in the fields of refrigerants, textile fibers, explosives and automotive finishes, their bitterest rivalry now involves hydrogen peroxide.

ICI affiliate CIL has just let the contract for construction of a peroxide plant at Hamilton, Ont., which, says its president, H. Greville Smith, will be "of latest design utilizing an improved electrolytic process."

Du Pont of Canada, meanwhile, is rushing completion of a filling plant at Maitland, Ont., from which it will supply Canadian customers with peroxide until it can complete engineering design and build a full-scale non-electrolytic plant at Maitland.

**Words and Prices:** Though the battle is currently only one of words, it may soon be one of prices. J. D. Converse, general manager of CIL's chemical division, believes his firm's plant "will provide fully for all present Canadian requirements and for the foreseeable future." But at least one Du Pont official thinks there could be some discrepancy between the two companies' appraisal of the market.

"After all," he says, "hydrogen peroxide sells in competition with other oxidizing and bleaching agents. In some fields—notably in our Canadian pulp and paper industry—resistance to use of peroxide has largely been on a price basis. A slight cut may be all that's needed to tap the market."

**Efficient or Cheaper?** Du Pont feels its ace in the hole is the cheaper non-electrolytic process developed by its parent firm in the U.S. two years ago.

CIL feels equally convinced that its own electrolytic process and other features of the plant represent "the most efficient design for maximum economy" in production. This plant is being built under patent license from Food Machinery's Becco Division.

The only currently operating peroxide plant in Canada is CIL's electrolytic facility at hydroelectric-power-rich Shawinigan Falls, first built in 1935 and expanded in 1952.

## Millionaire Makes a Bet

The multimillionaire board chairman of Aluminum Co. of America is diversifying his personal holdings into chemicals.

Eighty-nine-year-old Arthur Vining Davis, who retired from active management 8 years ago, has just bought 25,000 shares of the preferred stock of Re-Mark Chemical, a 15-year-old Florida agricultural chemicals firm.

Davis' chemical purchase marks a new field of interest for the aging-but-active industrial tycoon and gives him a still bigger stake in Florida's industrial future. Spending money at an average rate of \$250,000/day since the beginning of this year, Davis—whose holdings are said to be worth \$350 million—has channeled his investments into a wide variety of Florida enterprises. Until now, however, none of them have been chemical companies.

A partial list of his holdings in south Florida includes hotels, airlines, shopping centers, office buildings, a rock crushing company and a vast amount of real estate—so much, in fact, Davis is now said to own one-eighth of 2,054-sq.-mile Dade County, which includes Miami Beach, Miami, Coral Gables and Hialeah. He also owns 50,000 acres elsewhere in the state, along with 30,000 acres on the island of Eleuthera in the Bahamas.

Davis' first chemical venture, Re-



ALCOA'S DAVIS: A personal diversification into chemicals.

Mark, had a \$72,572 business volume in 1951. In the year ended last March 31, it had grown to \$573,205. There are 262,000 shares of nonvoting Re-Mark preferred on the over-the-counter market paying 10¢/share. The majority of the common, which pays no dividends, is held by the company's president, David Marks. Re-Mark manufactures sprays, disinfectants, fertilizers and other chemical products at three plants in the Miami area.

# A Pollution Law with Enforcement 'Teeth'

This week, for the first time in history, the chemical process industries are confronted with a federal water pollution control law that has real enforcement "teeth."

The new, permanent pollution measure, passed by Congress last week, replaces a law passed in 1948, which barred federal officials from taking an offender into court without the advance consent of officials of the state where the pollution occurred. The new law lifts this possible block; it allows federal legal proceedings, with no more than a request from the downstream state—if the polluted stream flows across state borders.

**Who Won?** The new law represents a substantial victory for the U.S. Public Health Service, for national conservation and wildlife groups, and for state agencies, since the extension of federal enforcement power was opposed by the American Pulp and Paper Assn., the Manufacturing Chemists' Assn. and other industry groups.

The enactment also represents a change in thinking by members of Congress, who, though they put an expiration date onto the first federal clean-water act in 1948, have made this year's law a permanent one. One possible reason: a realization that the problem of water pollution—both municipal and industrial—is a continuing one.

**Size of the Problem:** Mark Hollis, the chief engineer and an assistant surgeon general of USPHS, has estimated that municipal wastes discharged into streams today are equal to the total sewage produced by 55 million persons—as measured by the reduction in stream oxygen content. To this he adds untreated industrial wastes—estimated to be roughly double that of municipalities; the worry then assumes substantial magnitude.

A major problem is that as demands for the relatively constant U.S. water supply increase, it becomes necessary to re-use water several times before it evaporates or flows into the sea. Hollis, and those on his staff, feel the U.S. has been falling behind in meeting this problem. There is currently a backlog of \$2 billion worth of needed municipal sewage treatment plants—but even if built, these will likely have to use techniques that are

generally not much advanced over those used 50 years ago. And though just about every new industrial plant built these days makes provision for waste treatment, the officials see the problem of industrial wastes as an increasingly difficult one.

**Extent of Power:** But USPHS men are the first to emphasize that though the new law gives real enforcement powers, these will be used only as last resort.

Enforcement of the new law remains primarily a state function and responsibility, with federal action stringently limited to a last-recourse position. The act, moreover, is studded with procedural and other safeguards against premature and excessively harsh federal enforcement. As one observer put it, "It's a nice thing to have stored in the closet."

**More State Action:** On the other hand, businessmen are certain to find that the new law will bring more frequent visits from state pollution control agents. There will be more agents, and they will be better equipped to help industry handle its waste and—if necessary—to get the state courts to crack a whip on plants that don't do a good job of controlling pollution.

State, interstate and territorial pollution control agencies can divvy up \$3 million/year in federal grants to expand their staffs and pollution programs if they match the federal contribution with funds of their own. This is a potential \$6 million/year extra for administration of local pollution control programs. And while the grants will run only through 1961, the hope is that states will find their own funds to maintain these programs at the higher level.

The amounts available per state range from \$216,000 for New York, \$148,000 for California, \$165,000 for Pennsylvania, \$118,000 for Texas, \$86,000 for New Jersey—to name a few states where chemical manufacturing bulks large—to \$15,000 for such states as Nevada, Utah, Vermont, New Hampshire and Wyoming.

If past is prologue, states will match these funds, and, when the federal government steps out, will keep up the full program themselves. Where states had been spending \$2 million/

year for pollution, the \$1-million/year federal matching program enacted in 1950 boosted annual state spending to the \$4-million level.

**Research and Training:** The Public Health Service will be able to deploy far heavier artillery from now on. The new act authorizes training grants to put more pollution engineers into the field. And another \$2-million/year of federal money will be thrown into a vastly broadened research program to find cheaper and more effective methods of treating water pollutants. PHS's water supply and water control branch will beef up its present small staff to handle the bigger administrative load and provide more technical assistance to state agencies and industry.

Congress, however, has not yet appropriated funds for these increased programs—it has only "authorized" them. And there is often a considerable difference between the amount that's authorized and that which ends up being made available for use.

The proposed \$6-7-million/year level of federal spending, however, is a sharp step-up from the \$1.1-million rate at which PHS's stream pollution control program has been operating in each of the past two years. There will be a fresh attack, too, on treating sewage wastes. The act authorizes spending of \$500 million to help cities build sewage treatment plants.



**USPHS'S HOLLIS:** He has a new, stronger weapon in his 'closet.'

## Washington Angles »

» Don't look for an immediate shutdown of the Navy's paintmaking shops now that the Defense Dept. has won its fight to be able to close them. There's a fear that too quick a shutdown might injure the military's relations with Congress.

Too, the Pentagon isn't completely sure that its costs won't rise if manufacture of the 33 paint items made at the Norfolk, Va., and Mare Island, Calif., shops is turned over to private industry.

» The Texas City tin smelter will operate at least through Jan. 31, '57, now that President Eisenhower has signed a Congressional resolution authorizing operation until a plant buyer is found.

But a three-week slowdown is ahead for the plant, anyway. Plant officials say that because the approval came so close to the day when the plant would have had to shut down, they haven't been able to arrange to get the needed ore.

» The Navy will take over the oil shale works that the Interior Dept. had to abandon June 30 when it ran out of research money. The plant at Rifle, Colo., is located on Navy oil shale reserves.

» More medical research is ahead as a result of the Senate-House decision to give the National Institutes of Health \$184 million to spend in the current fiscal year—an \$86-million increase over '56. It's more than NIH says it can use efficiently.

The vote worries many private researchers, however. Merck President John Connor, speaking at the Food & Drug Administration's 50th anniversary celebration last week put it this way:

"We all have a responsibility to help inform the members of Congress and the general public about the limitations of government-managed scientific research . . . A large number of the future research accomplishments in the health field will be made in the laboratories of . . . non-governmental research organizations [which must] not be restricted unduly by governmental controls or governmental programs."

## EXPANSION

**Uranium:** Vitro Corp.'s rare metals division will expand its Canonsburg, Pa., plant with a \$1-million primary uranium processing plant, the first in eastern U.S. At the same time, it will add an improved solvent extraction process.

**Liquid Gases:** A \$7.5-million plant that will produce 55 tons of liquid oxygen, 15 tons of liquid nitrogen, 3.5 tons of liquid argon per day will be built in the Los Angeles area by Air Reduction Pacific Co., western division of Air Reduction Co.

**Methyl Methacrylate:** Du Pont, in spending "several million dollars" to modernize its Belle, W. Va., works, will double methyl methacrylate monomer production capacity.

**Ammonia:** The Texas Co. will begin building a 180-tons/day ammonia plant at Lockport, Ill., this fall. Operations are scheduled to begin late in 1957.

**Cement:** Three companies have announced plans for expansion of cement-making facilities in the Southwest: Permanente Cement Co. will build a \$10-million, 1.4-million-bbls./year plant at Scholle, N.M. Dewey Portland Cement Co. has announced

plans to build a \$10-million, 1.25-million-bbls./year plant near Albuquerque. Texas Portland Cement Co. has completed arrangements to finish a \$3-million plant at Echo, Tex., by Sept. 15.

**Butadiene:** Neches Butane Products Co. is planning a \$15-\$30-million expansion program on an 83-acre tract near Port Neches, Tex. Building will begin about Sept. 1.

**Sulfur:** British American Oil Co. has started construction of a new sulfur plant near Pincher Creek, Alta., Can. Production is scheduled for Oct. '56, with initial output of 225 long tons/day of sulfur from natural gas.

**Benzene/Toluene/Xylene:** Canadian Oil Companies, Ltd., will spend \$3 million to expand its petrochemical facilities at Sarnia, Ont.

## COMPANIES

**National Research Corp.** plans a public offering of \$6 million of convertible subordinated debentures due July 1, 1976. Half the proceeds will be used to buy additional capital stock in N. R. C. Metals Corp., to give this wholly owned subsidiary money it needs for expansion in zirconium. The remainder will be used for general corporate purposes.

**Universal Oil Products Co.** securities may be sold soon by the Guaranty Trust Co. of New York, trustee of the Petroleum Research Fund. Guaranty Trust has applied to the New York Supreme Court for authority to sell any or all of the company securities. Reason: to make room for diversification of research fund holdings, which are now made up primarily of UOP stock.

**Hercules Cement Corp.** will ask its shareholders to increase authorized common stock from 300,000 shares to 1 million shares prior to a 3-for-1 split of common stock. The new stock would have a par value of \$1/share, in contrast with \$10 for present stock.

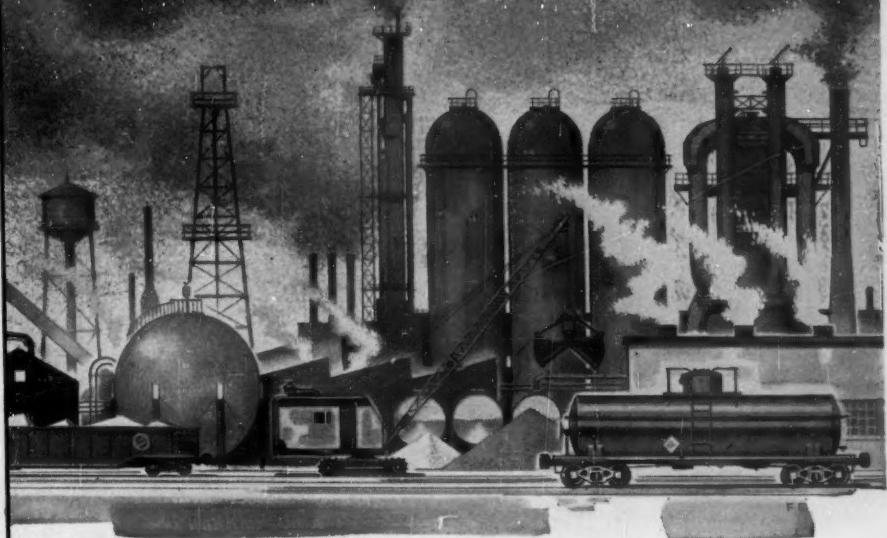
**Food Machinery & Chemical Corp.** has approved plans to sell \$30 million of 25-year sinking fund debentures. Proceeds will be used to provide working capital and to finance plant expansion.

**Olin Mathieson Chemical Corp.** will buy a portion of Marquardt Aircraft Co. stock that is still unsubscribed after expiration of the firm's 42,000-share capital stock offer to its stockholders. Olin already holds a large part of Marquardt's stock.

A three-way debenture and stock offer has been put on the market by

# IS YOUR INDUSTRY LISTED HERE?

Abrasives  
Aeronautical  
Automotive  
Brick and Tile  
Ceramic  
Cement and Concrete  
Cosmetic  
Disinfectants  
Electrical Manufacturing  
Electroplating  
Enamel  
Engraving and  
Electrotyping  
Feed Stuff, Mineral Feed  
Fertilizer  
Food  
Glass  
Insecticide and Fungicide  
Laundry  
Leather  
Lithographing  
Linoleum and Floor  
Covering  
Lubricant  
Match  
Metallurgical  
Metal Working  
Oil Cloth  
Optical  
Paint, Varnish and Lacquer  
Paper  
Petroleum  
Pharmaceutical  
Photographic  
Porcelain Enamel  
Plastics  
Pottery  
Printing Ink  
Pyrotechnic  
Refractories  
Rubber  
Shade Cloth  
Soaps  
Textile  
Veterinary Remedies  
Welding Electrodes  
Wall Paper



## HARSHAW CAN SERVE YOU!

**Harshaw sells chemicals — thousands of them —  
for these and many other industries**

**Here are typical Harshaw chemical products**

- |   |   |
|---|---|
| Electroplating Salts, Anodes<br>and Processes       | Fluorides                                   |
| Organic and Inorganic Dry<br>Colors and Dispersions | Glycerine                                   |
| Driers and Metal Soaps                              | Preformed Catalysts, Catalytic<br>Chemicals |
| Vinyl Stabilizers                                   | Synthetic Optical Crystals                  |
| Ceramic Opacifiers and<br>Colors                    | Agricultural Chemicals                      |
|   | Fungicides                                  |
|   | Chemical Commodities                        |

### THE HARSHAW CHEMICAL CO.

1945 EAST 97th STREET • CLEVELAND 6, OHIO

Chicago • Cincinnati • Cleveland • Hastings-On-Hudson, N.Y. • Houston • Los Angeles  
Detroit • Philadelphia • Pittsburgh

**WRITE TODAY FOR  
YOUR COPY**



## This firm is making chemical history!

How does a company grow from one plant to one of the largest multi-plant producers of phosphorus chemicals?

A far more challenging question is: how does a company do it *in four years*?

At Shea Chemical Corporation (which achieved this record) the answer lies in our conviction that "There's always room for improvement."

Survival and rapid growth in big business takes the right kind of people—the kind who refuse to admit that something "can't be done." People with vision, competence . . . and a measure of guts.

Does your company need phosphorus products that "can't" be supplied in the time and in the way you'd like 'em?

"Can't?"

**SHEA is doing it!**

Sodium Tripolyphosphate  
Tetrasodium Pyrophosphate  
Disodium Phosphate  
Trisodium Phosphate  
Sodium Hexametaphosphate  
Phosphoric Acid



**CHEMICAL CORPORATION**

Jeffersonville, Indiana • New York 16, New York

Lake Ontario Portland Cement Co., Ltd. The offering consists of \$6,497,-400 of 5½% debentures due 1971; 232,050 shares of \$10 par convertible preferred stock, and 696,150 common shares.

### FOREIGN

**Potash/Jordan:** Arab League envoys have just signed a pact with the Jordanian government to launch a jointly owned potash company in the Jericho area. The project, estimated at \$12.5 million, will exploit minerals from the Dead Sea. Arab governments will have shares worth \$4.3 million.

**Alumina/Jamaica:** Aluminum Ltd.'s British West Indian subsidiary, Alumina Jamaica Ltd., will build a second alumina manufacturing plant on the island of Jamaica. Capacity will be 245,000 tons/year of alumina. Construction is starting immediately, with full-scale production expected by mid-'58. Cost: \$35 million.

**Phosphates/Nyasaland:** Phosphate deposits in the Lake Chilwa area of Nyasaland, said to contain 3 million tons of ore, are being examined by the Anglo-American Rhodesian Mineral Exploration Ltd. A one-year prospecting license has been granted to the company.

**Synthetic Yarn/Chile:** The Chilean government has just approved Celanese Corp.'s plans to put up a 3-million-lbs./year acetate yarn plant near Valparaiso. The new multimillion-dollar installation is scheduled to go on-stream by the end of '57.

**Fertilizer/India:** Nitrogenous fertilizer capacity at the state-owned Sindri fertilizer plant in Bihar will be expanded to 117,000 tons/year by late '57, at a cost of \$21 million. The \$46-million plant at Nangal, scheduled for startup in 1960, will provide an additional 70,000 tons/year of fixed nitrogen for Indian needs, along with a substantial quantity of heavy water.

**Petrochemicals/Germany:** Farbenfabriken Bayer will build a new cracking plant at its Dormagen factory to produce gaseous olefins—primarily ethylene. The new unit will be a part of the firm's \$143-million capital spending program scheduled for 1956-58.

Hoffmann-LaRoche  
watches its  
*P's and Q's*

Pure Metasap  
stearates  
guard Quality  
of pharmaceuticals

Hoffmann-LaRoche Inc., in their Syngtrogel\*, Gantrisin\*, and Gantricillin\* tablets use small amounts of Metasap Stearates to keep the tablets firm, avoid chipping. It's easy to see, therefore, why we exert every effort to keep Metasap Stearates "the cleanest stearates made".

This same trusted purity of Metasap Stearates helps guard quality in many other industries too—in textiles, foods, recordings, greases—where even a few tiny traces of foreign material might harm the reputation and performance of the product.

Metasap uses the most complete series of fine screens, magnetic traps and filters in the industry—we even carefully filter the air in our processing plant. So depend on this—for stearates of supreme uniformity and quality, specify Metasap. Our Technical Service Department will gladly give you every assistance.

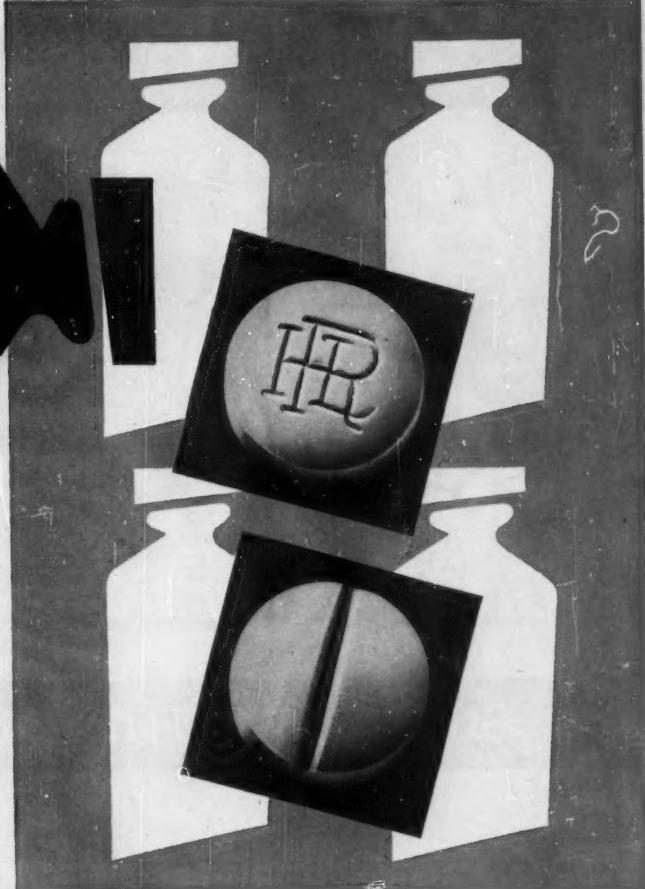
\*Reg. T. M. Hoffmann-LaRoche Inc.



METASAP CHEMICAL COMPANY

HARRISON, NEW JERSEY • Chicago, Ill. • Boston, Mass.  
Cedartown, Ga. • Richmond, Calif. • London, Canada

*the cleanest stearates made*



#### Some industries served by Metasap

**PAINT** makers solve pigment suspension problems with Metasap Stearates, producing flat paint and sanding sealers that have excellent sanding qualities.

**LACQUER AND VARNISH** makers use Metasap Stearates to assure efficient flattening, and to obtain better finishes.

**PLASTICS** molders use Metasap Calcium, Zinc, and Barium Stearates to improve internal lubrication, which assures superior preforms, better finished products, and longer mold life.

**RUBBER** processors use Metasap Zinc and Magnesium Stearates to lubricate molds and prevent uncured stock from sticking.

**LUBRICANTS**—Grease makers use Metasap Stearates because these outstanding soaps afford a wide range of quality bases that help producers to meet any grease specifications.

**PAPER, Textiles, Cosmetics, Food Processing, Pharmaceuticals,** and many other industries call upon Metasap Stearates to perform important services.



## HOW TO SAVE MONEY



Relieve warehouse overload.



Combined orders can cut costs.



Reduce paperwork—one shipment, one order, one invoice.

## BUYING SOLVENTS AND CHEMICALS



Fast action—one day service.



Products of the nation's leading producers.

### Products of the SOLVENTS and CHEMICALS GROUP

- Aliphatic Petroleum Naphthas
- Alcohols and Acetates
- Alkanolamines
- Aromatic Solvents, Petroleum and Coal Tar
- Chlorinated Paraffins
- Chlorinated Solvents
- Dresinates
- Glycols and Glycol Ethers
- Ketones and Ethers
- Oils and Fatty Acids
- Plasticizers
- Rosin
- Sterates
- Terpene Solvents
- Waxes

**IN DRUM, TANK-WAGON, TRANSPORT AND TANK CAR FROM 17 SERVICE LOCATIONS**



### THE SOLVENTS AND CHEMICALS GROUP

2540 WEST FLOURNOY STREET, CHICAGO 12, ILLINOIS

#### Bulk Plants and Warehouses

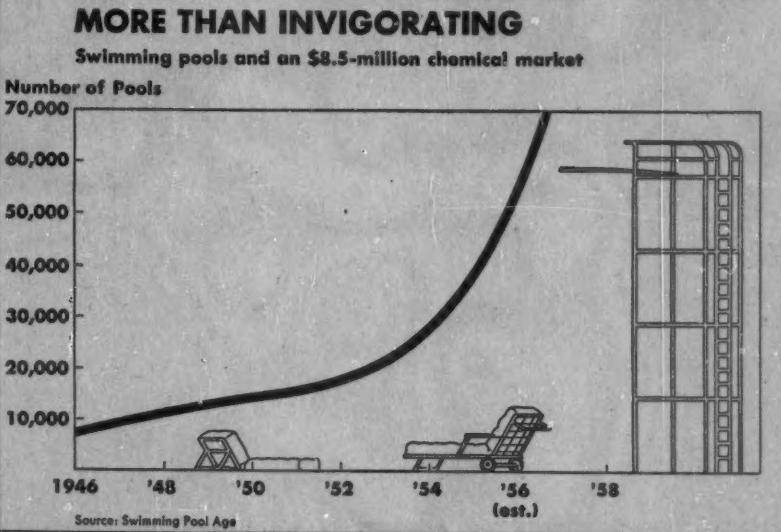
BUFFALO, Bedford 1572  
CHICAGO, Sibley 3-0505  
CINCINNATI, Elmhurst 1-4700  
CLEVELAND, Clearwater 2-1100  
DALLAS, Federal 5428  
DETROIT, WALnut 1-6350

FORT WAYNE, Anthony 0213  
GRAND RAPIDS, CHerry 5-9111  
HOUSTON, ORchard 2-6683  
INDIANAPOLIS, MEIrose 8-1361  
KANSAS CITY, CHEstnut 1-3223  
LOUISVILLE, EMerson 8-5828

MILWAUKEE, Greenfield 6-2630  
NEW ORLEANS, VERNon 3-4666  
ST. LOUIS, GARfield 1-3495  
TOLEDO, JORDAN 0761  
WINDSOR, CLEARwater 2-0933

# Charting Business

CHEMICAL WEEK  
July 7, 1956



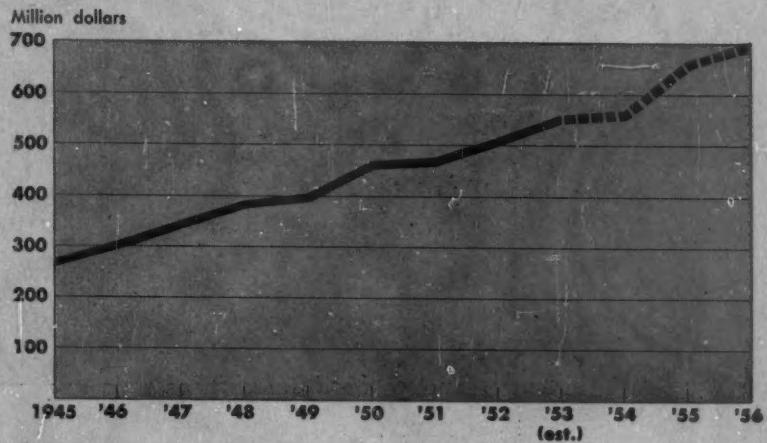
RESTRAINED for many years, construction of swimming pools is now proceeding at a spectacular clip, bringing smiles to chemical suppliers.

It's estimated that the 56,000 existing pools, plus those built in 1956, will consume \$8.5 million/year worth of chemi-

cals (e.g., chlorine, hypochlorites, paints). Well over half the pools (61%) are outdoors; some 62% are residential; about 61% are equipped with gas chlorinators. Of existing pools, nearly 52% dot the Pacific Coast; 16% are in Texas and in the mid-South; 11% on the East Coast.

### CLOCKING ADVERTISING EXPENDITURES

Chemical process industries push steadily ahead

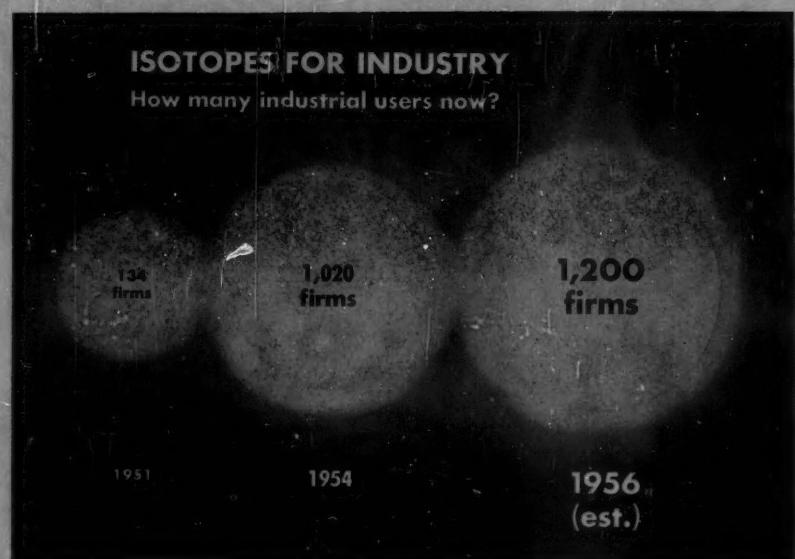


FLUCTUATIONS in chemical industry sales have not kept total advertising expenditures by chemical and chemical process firms from mounting steadily over the years. Quickening competition, however, may well boost this curve's rate of climb in 1956. One indica-

tion: advertisers, agencies and business papers predict 9% higher industrial advertising budgets than in 1955. Most of the dollar outlays from chemical industry's budget go to business papers. Product literature takes the next biggest slice of ad budgets.

## Charting Business

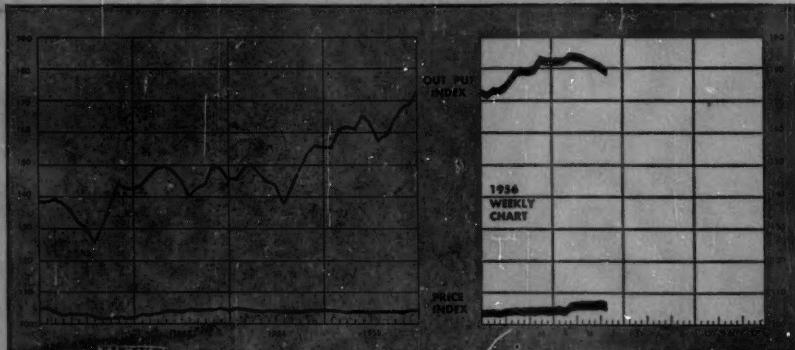
(Continued)



WHILE industrial firms constituted only 22% of the total radioisotope users in 1951, today they account for nearly twice that percentage. One significant reason: industry is now saving an estimated \$150 million/year by using radioisotopes. "Hot" atoms find indus-

trial use now, for example, in tracking liquid flows, pinpointing pipe leaks, energizing pumps, gauging metals, and for radiography. Examples of uses in industrial research: formulating water-resistant paints, heat-resistant plastics, superior tires, toothpaste, soaps, detergents.

### BUSINESS INDICATORS



#### WEEKLY

Chemical Week Output Index (1947-49=100)  
Chemical Week Wholesale Price Index (1947=100)  
Stock Price Index of 11 Chemical Companies  
(Standard & Poor's Corp.) .....

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	176.6	177.2	162.1
Chemical Week Wholesale Price Index (1947=100)	105.3	105.4	104.3
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.) .....	482.2	472.0	466.8

#### MONTHLY — Production (Index 1947-49=100)

All Manufacturing and Mining .....

	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining .....	142	144	138
All Chemical Products .....	173	179	165
Industrial Chemicals .....	198	200	182

# "No other group could have done a better job than GIRDLER"

**reports Texas Eastman Company  
about Girdler's Engineering Service**

IN 1954, Girdler engineered and procured the equipment for the Longview, Texas, polyethylene plant of the Texas Eastman Company, a division of Eastman Kodak.

After the plant was in operation, Texas Eastman's engineering management reported: "The polyethylene plant has operated extremely well, thanks in a large part to the very fine job everyone at Girdler did for us. Time and again, we can see where the thought that went into the layout and piping up of equipment has paid off in a very large way. We know that no other group could have done a better job, and it is highly unlikely that anyone would have done as well as Girdler."

## And Now . . . Girdler Selected Again

Texas Eastman is now expanding this Longview plant. And the above comments point up why Girdler has been selected for engineering and procurement of equipment and materials for the new facilities as for the original plant. Texas Eastman—like so many leading companies in the chemical, petroleum, plastic materials, food and fertilizer fields—has found that Girdler's broad experience results in outstanding process performance for them.

When you plan plant expansion or modernization, take advantage of Girdler's *complete design-engineering-construction service*. You can get all the facts by contacting our nearest office.



The **GIRDLER** Company

A DIVISION OF NATIONAL CYLINDER GAS COMPANY

LOUISVILLE 1, KENTUCKY

GAS PROCESSES DIVISION...Design, Engineering, Construction of Hydrocarbon Processing Plants,  
Gas Plants, Chemical Plants. Offices: New York, San Francisco

# ADMINISTRATION



NOTHING TODAY, THANKS: Dollar shortage and expanding home industry cut U.S. chemical exports to Brazil as . . .

## Brazil Gears for Chemical Self-Sufficiency

For U.S. chemical manufacturers, the lucrative Brazilian export market is becoming a thing of the past (see table, p. 32). But already, an increasing number of U.S. companies are cashing in on Brazil's growing appetite for chemicals by producing locally in this Portuguese-speaking land.

Reasons for the steady decline in U.S. chemical exports to Brazil: U.S. dollars are scarce and expensive in Brazil; the Brazilian chemical industry has embarked on a program of chemical self-sufficiency.

The shortage of dollars has caused Brazilian importers to slash drastically orders from the U.S. and to turn instead to European countries with less expensive, more available currencies. One result of this turnaround is increased trade with Iron Curtain countries—whose currencies are cheapest, locally—bringing about a doubling of some Communist chemical exports to Brazil.

While the dollar situation may get better, the steady growth of Brazil's chemical industry can result only in a diminishing of imports. Wide-awake

U.S. companies realize this, and the list of American chemical firms producing in Brazil is expanding daily—already including most of the largest U.S. chemical and pharmaceutical combines.

**Petrochemical Growth:** Chemical expansion in Brazil is fastest in the petrochemical field—a newcomer to Brazilian industry. When Petrobras, the Brazilian oil monopoly, announced that it was building a \$2.5-million ethylene plant alongside its new 65,000-bbls./day refinery at Cubatao, a nest of U.S. petrochemical manufacturers grew up around the refinery—almost overnight (see table). A. William Capone, managing director of Koppers' local plastics company, had this to say about his company's entrance into chemical and petrochemical production in Brazil: "If we were to continue to supply Brazil with chemicals, we had to get in and produce here."

Douglas S. Gorman, director of Union Carbide's Brazilian activities, added that "Brazil has a great future for chemicals—our basic raw mate-

rials fit right into the country's industrial expansion—we can't lose on the long haul." Union Carbide officials see Brazil becoming self-sufficient in a growing list of chemicals very soon.

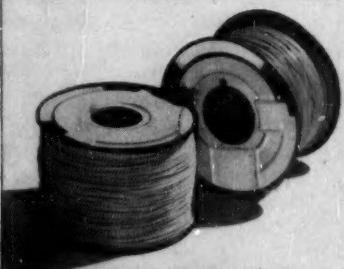
There is general feeling in Brazil that self-sufficiency in synthetic resins, methanol and formaldehyde will be attained shortly after the new Borden petrochemical plant at Cubatao is completed. John J. O'Connor, director of Borden's activities in Brazil—where Borden operates under the name of Alba S.A.—is no more optimistic over the future of U.S. exports to Brazil than his fellow industrialists. Says O'Connor: ". . . an American chemical company that doesn't set up production in Brazil will eventually lose whatever business it now has in that country."

**Native Production:** But not all local production is being carried on by foreign companies. To take care of fertilizer needs, Petrobras is building a plant to make ammonia for production of 330 tons/day of fertilizer. Petrobras holds that this will cut out almost all imports of such fertilizers

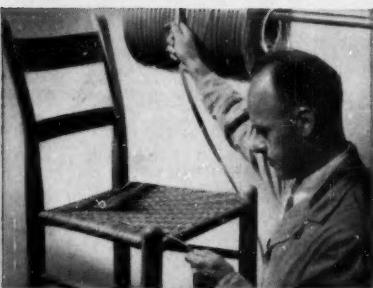
**Protect...decorate...strengthen...with**

# **CELLULOSE ACETATE and CELLULOSE ACETATE BUTYRATE**

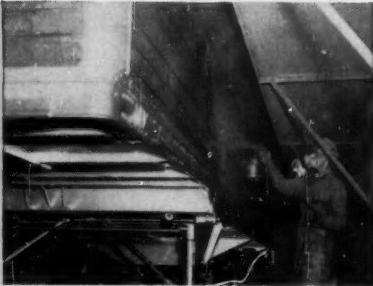
**...versatile film formers by Eastman**



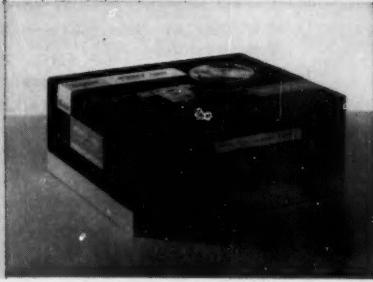
**SAFEGUARDING CABLE PERFORMANCE**—Among the oldest protective coating applications for Eastman cellulose acetate is wire and cable lacquer. Such lacquers provide an excellent waterproof coating along with toughness and abrasion resistance. Lacquers made with Eastman cellulose acetate butyrate are also used in this field, particularly for the protection of ignition cables and other specialized wiring.



**WATERPROOFING FIBER**—Half-Second Butyrate (Eastman's low-viscosity cellulose acetate butyrate) is used to make fiber weaving materials water-repellent. The fiber stripping is passed through a hot melt of Half-Second Butyrate, emerging with a clear coating which maintains its gloss and strength despite the damaging effects of repeated washings and outdoor exposure. The coating also resists scuffing and the attack of mild acids and alcohol.



**PROTECTING ALUMINUM OUTDOORS**—Prolonged testing with a leading user of aluminum trailer trucks shows that clear lacquer made with Eastman Half-Second Butyrate can furnish long-lasting protection for outdoor aluminum surfaces against pitting and spotting. What's more, these lacquers can be applied easily and inexpensively, for no prime coat is needed on properly cleaned surfaces, and the lacquers air-dry in three to five minutes.



**IMPROVING PACKAGE APPEARANCE**—A superior decorative and protective coating for paper and foil has been found in Half-Second Butyrate. The lacquer shows excellent adhesion over inks, imparts a high gloss, and is outstanding in its resistance to discoloration by sunlight and aging. It is effective in films far thinner than possible with ordinary lacquers, providing greater mileage per gallon. And its superior eye-appeal pays off quickly at the point of sale.

Cellulose esters made by Eastman may be just what you need if you are seeking a film to protect, decorate, seal, cushion or mask some particular product. Eastman cellulose acetates and cellulose acetate butyrates are available with varying acetyl and butyryl contents in a wide range of viscosities. They are used in numerous formulations as special purpose coatings on metal, glass, paper, plastic, foil and wood. For more information on the properties of these Eastman products, call our nearest sales office or write: EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

**SALES OFFICES:** Eastman Chemical Products, Inc., Kingsport, Tennessee; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; St. Louis; Houston.  
**West Coast:** Wilson Meyer Co., San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

**Eastman**  
CHEMICAL PRODUCTS, INC.  
KINGSPORT, TENNESSEE  
a subsidiary of EASTMAN KODAK COMPANY

## ADMINISTRATION



**KOPPERS' CAPONE:** For Brazilian markets, produce locally.



**CARBIDE'S GORMAN:** Raw materials for a great chemical future.



**BORDEN'S O'CONNOR:** No optimism about U.S. exports to Brazil.

saving Brazil \$10 million annually in imports. To help meet coal-tar demands, the national steel mill—Volta Redonda—is expanding its coal-tar production from 50,000 tons to 72,000 tons/year. Three more steel mills scheduled for construction sometime in the 1960s will add to this output.

An old-line Brazilian company joining in the chemical expansion boom is Cia. Nitroquimica Votorantim. This firm—long a leader in Brazil's paper, cement and metals industries—recently went into heavy chemicals. In the past five years, Votorantim has spent \$15 million in chemical plant expansion, and plans to spend another \$15 million.

Another strategic native chemical producer is the Matarazzo chemical interest, which supplies chemicals for

the 280 diverse plants of the huge I.R.F. Matarazzo industrial combine.

In addition to competition from European companies for the export market, U.S. manufacturers are receiving stiff competition from Europeans in local production. West Germany's Farbwerke Hoechst—in joint venture with W. R. Grace & Co. (New York)—and Farbenfabriken Bayer (Germany), Durham Chemical Co. and International Paints, Ltd. (Britain), and several Swiss companies are building chemical plants in Brazil.

Bayer is reported to have proposed—in negotiations with Brazilian Presi-

dent Juscelino Kubitschek—construction of five chemical plants. Included: plants for producing aniline dyes and by-products; intermediate products for aniline; insecticides, fungicides and weed killers; synthetic resins and plastics; and a plant for making chromates, bichromates and chromic acid—first of its kind in Latin America.

Chemical interests in Brazil are many and varied, and they are certain to become more so in the future. But already, many U.S. manufacturers are in on the ground floor, recognizing that to supply chemicals to Brazil, you have to get in and produce locally.

### U.S. CHEMICAL EXPORTS TO BRAZIL HAVE BEEN FALLING OFF

	All Chemicals	Industrials	Coal-tar Products	Medicinals & Pharmaceuticals
1954	\$67.3 million	\$18.1 million	\$6.9 million	\$20.7 million
1955	39.5 million	5.6 million	3.1 million	11.5 million
1956*	10.0 million	1.8 million	0.7 million	3.3 million

\* U.S. Dept. of Commerce first-quarter statistics

### But These U.S. Chemical Companies Have an Answer: On-the-Spot Production

**Koppers Co.**—polystyrene

**Borden Co.**—urea, synthetic, and phenol resins, industrial adhesives, casein glue, formaldehyde and methanol

**Firestone**—petrochemicals

**W. R. Grace**—petrochemicals

**Columbian Carbon**—carbon black

**Du Pont**—explosives

**Goodrich**—plastics base

**Dewey & Almy Div. of W. R. Grace**—sealing compounds.

**Sharp & Dohme Div. of Merck**—pharmaceuticals

**American Home Products**—antibiotics and pharmaceutical specialties

**Squibb Div. of Olin Mathieson**—pharmaceuticals

**Eli Lilly**—pharmaceuticals

**Abbott Laboratories**—pharmaceuticals and antibiotics

**Polyplastex United, Inc.**—decorative vinyl laminates

**Parke, Davis**—pharmaceuticals

**Charles Pfizer**—antibiotics, steroids, pharmaceutical specialties and animal feed supplements

### And These U.S. Companies Are Building Brazilian Plants:

**Union Carbide**—petrochemicals

**Celanese**—petrochemicals

**Koppers**—petrochemicals

**Rohm & Haas**—Plexiglas and plastics

**Food Machinery**—insecticides

**Borden**—petrochemicals

**Du Pont**—Freon gas

## ADMINISTRATION

# Fungicide Patent Falls

Pending a possible appeal by Rohm & Haas, you can cross out as "invalid" that company's 1953 reissue patent (Re 25,742) on the use of nabam as a fungicide.

Unless reversed by a higher court, last week's decision by Judge Ben Moore in the U.S. district court at Charleston, W. Va., will free Roberts

Chemicals, Inc. (Nitro, W. Va.) and possibly other concerns to keep right on producing and selling nabam (sodium salt of ethylene bisdithiocarbamic acid) as a fungicide.

Holding that the patent was invalid because it did not include "process claims," Moore dismissed R & H's two-year-old infringement suit against

**ELEMENTAL  
BORON**  
*in commercial  
quantities*  
manufactured  
to meet your  
specific needs!

Today's elemental boron, no longer a laboratory curiosity, is a fast-growing chemical with important commercial aspects. For those working in Boron Chemistry, Trona\* now offers several grades of elemental boron to meet your specific needs. Trona, a world leader in the development of commercial boron, has the technical know-how and production facilities to fill your orders in any quantity without delay.

**CURRENT FIELDS OF APPLICATION:**

In the Military, elemental boron is being used in Ordnance applications for flares, fuses, ignitors, and propellant mixtures. Commercially, it is used in borides for high temperature applications, and with plastics for lightweight neutron shields.

To get more information about Trona's special grades of elemental boron, call your Trona technical representative today.

**TRONA**

Contact Sales Development Department

**American Potash &  
Chemical Corporation**

3030 W. Sixth St. 99 Park Avenue  
Los Angeles 54 New York 16  
Dunkirk 2-8231 Oxford 7-0544

\*TRADE MARK AP&CC

## STRENGTH IN NUMBERS

	Number of Trained Engineers in Country's Work Force		Total Number of Engineers and Scientists
	1920	1954	
<b>U.S.</b>	<b>215,000</b>	<b>500,000</b>	<b>1.2 million</b>
<b>U.S.S.R.</b>	<b>41,000</b>	<b>541,000</b>	<b>1.2 million</b>
		Number of Engineers Graduated from Colleges	Projected Number of Engineers and Scientists to be Graduated in 1960
		1950 1955	
<b>U.S.</b>	<b>52,000</b>	<b>23,000</b>	<b>125,000</b>
<b>U.S.S.R.</b>	<b>28,000</b>	<b>63,000</b>	<b>155,000</b>

## Engineer/Scientist Box Score

OUTDISTANCED IN trained manpower, and hence in potential for advances in technology—that's the sobering outlook for the U.S., based on extrapolation of latest personnel statistics.

Though far behind the U.S. in number of engineers and scientists back in 1920, the Soviet Union has caught up and appears to be forging ahead (*upper table*). These are the figures of the Joint Congress

ional Committee on Atomic Energy and of the Central Intelligence Agency. At the same time, this country's leading engineering schools are losing instructors to industry, thus limiting their ability to turn out more and better qualified engineering graduates (*lower table*). This was the finding of an industry committee, as reported at last week's annual meeting of the American Society for Engineering Education.

## FLOW OF ENGINEERS: FROM FACULTIES TO INDUSTRY

(Engineering instructors at 93 recognized colleges, 1954-56)

Average Number on Faculties	Gained from Industry	Lost to Industry	Net Loss to Industry
5,286	324	495	171



## business as usual

The point is that he can stay right at his desk and have his office completely painted around him without discomfort. He can when the paint is based on GELVA emulsions. GELVA emulsion polyvinyl acetate paints are odorless, non-toxic, quick drying, and permit easy soap and water cleanup of painting equipment.

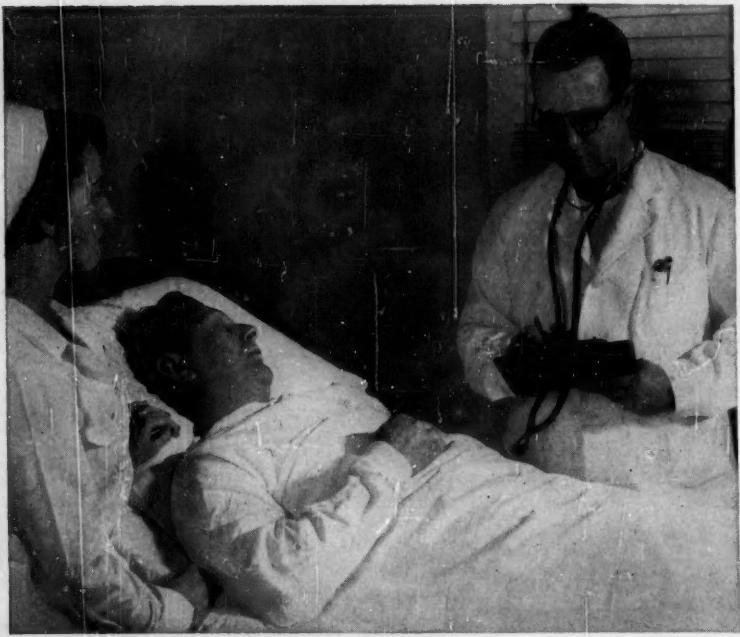
Shawinigan has successfully formulated GELVA emul-

sions for polyvinyl acetate paints since 1944. This unequalled experience combined with continuing research makes Shawinigan a name to remember in today's paint market. For full information write Shawinigan Resins Corporation, Department 1129, Springfield 1, Mass.

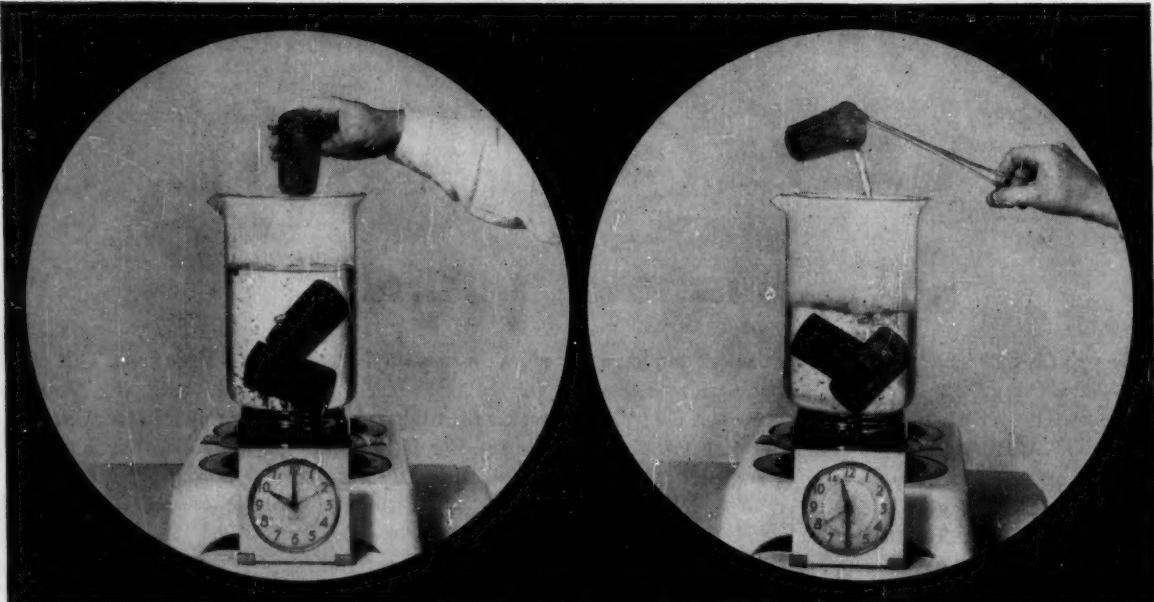
**GELVA®** emulsions for paints



# Life on the Chemical Newsfront

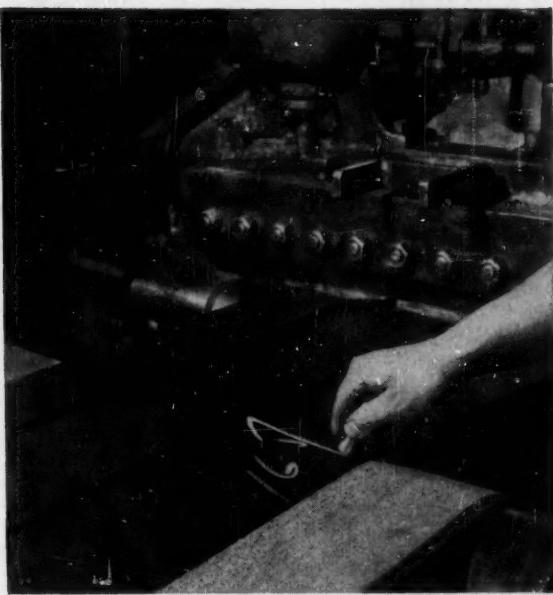


**DISCOVERY OF TRANQUILIZING EFFECTS** of thiazine derivatives has stimulated great interest in new starting materials for their synthesis. A possible source now undergoing research is 2-aminobenzenethiol, a new Cyanamid chemical. A highly reactive, bifunctional compound, it undergoes reactions typical of amino and mercapto groups and where possible, reaction occurs at both groups forming benzothiazole and benzothiazine derivatives. Other reactions are of interest in pharmaceutical, rubber, dye, petroleum and insecticide research. Its amphoteric character leads to salt formation by reaction with bases and acids. Oxidation leads to bis(2-aminophenyl)-disulfide (also available from Cyanamid), long known as a pharmaceutical. 2-Aminobenzenethiol is now offered in pilot-plant quantities. (New Product Development Department)



**PROLONGED IMMERSION IN BOILING WATER** causes no distortion of two new heat-resistant thermoplastic molding compounds demonstrated by Cyanamid at the 7th National Plastics Exposition in June. CYMAC<sup>\*</sup> 400 Polymethylstyrene offers this unusual heat resistance together with the mechanical and electrical properties, clarity, luster, unlimited range of transparent and

opaque colors and other desirable properties of polystyrene. CYMAC 201 Methylstyrene-acrylonitrile copolymer offers greater toughness, chemical and craze resistance than CYMAC 400, with high heat resistance, clarity and color range. Both new molding compounds offer the added value of heat resistance at costs no greater than competitive materials. (Plastics and Resins Division)



*Photo by Jack Knight*

**HOT, BUT NOT SCORCHED!** Higher rubber processing temperatures than ever before are encountered in the use of new, small particle size reinforcing furnace blacks. To prevent scorching in operations such as the extruding process above, a chemical was needed that would delay action beyond anything heretofore developed. Now the maximum in delayed action is offered in Cyanamid's new DIBS® Accelerator (N,N-diisopropyl benzothiazole-2-sulfenamide), available in semi-commercial quantities. With a melting point in the range of 55-59° C, DIBS is easily blended into furnace black stocks. It has good storage stability under normal temperatures. A special report on the behavior of DIBS in furnace black stocks is available on request. (Organic Chemicals Division)



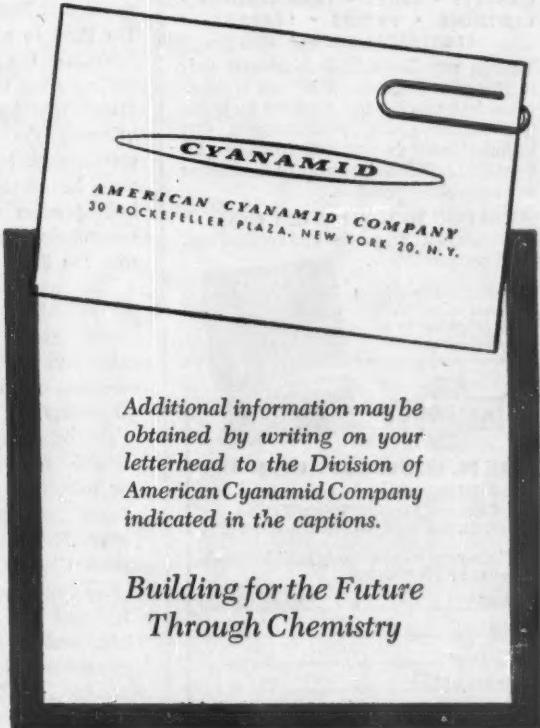
**UTILITY CAN BE EYE-APPEALING, TOO.** Now tough, unbleached kraft corrugated cartons are coated with pigmented overlay coatings. In such applications, PAREZ® Resin 613 is used to help insolubilize the coating to give improved wet-rub resistance. With this protection, bright, even, solid color printing is possible which weathers scuffing in shipment, rough handling, even soaking rain, and still comes out bright with the manufacturer's label or message intact. (Industrial Chemicals Division, Dept. D)

\*Trademark

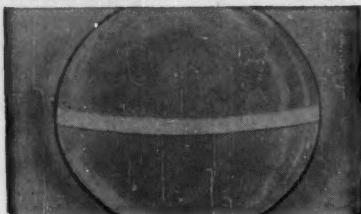


**PRELIMINARY STUDIES OF FUNGICIDES** made up of s-triazine derivatives of cyanuric chloride indicate the great versatility and potential of this chemical. 2,4-Dichloro-6-(*o*-chloroanilino)-s-triazine† has been shown to be extremely effective against tomato blight fungus and other leaf and turf diseases. Many other derivatives made possible by the high selective reactivity of the chlorine substituents of cyanuric chloride and the extreme stability of the triazine ring are leading to new developments in insecticides, plastics and resins, pharmaceuticals, dyestuffs, surfactants, rubber chemicals and other fields. For a comprehensive roundup of recent work, send for "Cyanuric Chloride Derivatives." (Industrial Chemicals Division, Dept. D)

†U. S. Pat. No. 2,780,480



## New Dimensions in Rubber



**IMMERSION** in red fuming nitric acid for one week has no appreciable effect on the physical properties of KEL-F Elastomer.

### KEL-F® fluorocarbon ELASTOMER has outstanding thermal and chemical resistance

Kellogg's new fluorocarbon rubber is shattering existing concepts about rubber. Here is a chemical rubber that combines superior elastomeric properties with excellent chemical resistance and thermal stability. KEL-F Elastomer was especially developed to stand up under the severest operating conditions involving corrosive atmospheres and high temperatures.

KEL-F Elastomer's other outstanding advantages include: high resistance to fuels, solvents and lubricants...low moisture absorption...non-flammability...excellent resistance to weathering and microorganisms.

This unique combination of properties makes KEL-F Elastomer particularly suited to such heat- and chemical-resistant products as:

**HOSE • TUBING • DIAPHRAGMS •  
GASKETS • SEALS • TANK LININGS •  
CLOTHING • PAINTS • SEALANTS •  
ELECTRICAL INSULATION**

Kellogg supplies KEL-F Elastomer only in the gum form which in turn is fabricated into specific end products by qualified rubber goods manufacturers. Our technical staff is prepared to show you how KEL-F Elastomer may be the answer to your rubber problem.

**SEND FOR NEW BOOKLET** on KEL-F Elastomer—its properties and applications. Mail coupon below.

© KEL-F is the registered trademark of The M. W. Kellogg Company for its fluorocarbon products.



#### THE M. W. KELLOGG COMPANY

Subsidiary of Pullman Incorporated  
Chemical Manufacturing Division  
P. O. Box 469, Jersey City 3, N. J.

Please send me your newly published booklet KEL-F ELASTOMER.

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

POSITION \_\_\_\_\_

ADDRESS \_\_\_\_\_

## ADMINISTRATION

Roberts. For a different reason, a West German patent appeals board only last month refused Rohm & Haas a patent on the same product—charging prior publication of both methods of preparation and uses.

**"Latecomer" Charges Used:** Rohm & Haas charged that Roberts did not go into the nabam business until after the reissue patent had been granted, and warned that Roberts' distributors and customers should not be "authorized and induced to purchase the defendant's inferior products with their conceded dangers of spontaneous combustion, decomposition, and lack of effectiveness."

In its countercharges, Roberts tried to prove "lack of invention" in the original patent. This attack was based on alleged "sufficient disclosure" by prior publications, suggesting possible uses of related compounds in control of fungus growth on living plants.

Roberts also claimed intervening rights based on use of nabam prior to the '53 patent reissue. The West Virginia firm further held that nabam is unpatentable because "a patentee may not use a patent on a process [for] originally unpatented material in order to control the manufacture or use of that material."

**Others in the Field:** Judge Moore noted that Rohm & Haas has allowed Du Pont to sell nabam for use as a fungicide for several years, and refrained from taking action "because it feared that by doing so it would be misusing the patent." There would certainly be less ground to fear misuses, he commented, if R & H had held process claims in addition to composition claims while competing with Du Pont.

The ruling said, in effect, that the plaintiff—because it did not clearly specify exact directions for diluting nabam to produce a stable chemical mixture—could not claim patent infringement.

This decision will probably open the door for disposition of two other law suits filed by Rohm & Haas for alleged infringement of the nabam patent. The suits: at Wilmington, Del., against Chemical Insecticide Corp. and U.S. Fungi, Inc. (both of New York City) and Joseph Lambert (Smyrna, Del.), and at Grand Rapids, Mich., against Consolidated Industrial Chemicals, Inc., and Diamond Fertilizer Co. (both of Lansing, Mich.).



**JUDGE JOHNSON:** On classing and handling, Customs Court is upheld.

## LEGAL

**Importers Overruled:** In the unending skirmish between importers and domestic producers, the U.S. Court of Customs and Patent Appeals has handed down two recent decisions against the importers, with Associate Judge Noble Johnson writing both opinions. Both decisions upheld rulings of the U.S. Customs Court. One involved classification of homatropine hydrobromide, which will continue to be taxed as a coal-tar medicinal (7¢/lb. and 45% ad valorem) despite the importer's protest that it should be regarded as a bromide compound not specifically provided for (10¢/lb.).

The other case concerned procedure in the Customs Court, which is organized in three divisions, each having its own jurisdiction as to kinds of merchandise. This case had been assigned to the second division, but part of the hearings were held before a judge from another division. The importer asked that this judge be transferred to the second division so he could participate in the decision, but this was refused. His appeal—rejected by the appeals court—was based on asserted violation of constitutional rights.

**Antidumping Challenge:** Another recent court ruling in an importer-producer conflict is the refusal by a special three-judge federal court in Washington to try the suit in which importers of cast-iron soil pipe are

for high purity pipeline acetylene

National Carbide

CALVERT CITY, Kentucky



Growing Chemical Center

Here are the advantages that a location at Calvert City, Ky., offers manufacturers and processors of acetylene-based materials:

1. High purity pipeline acetylene makes purification to *your* exacting standards simple and inexpensive.
2. National Carbide's liberal load factor.
3. Availability of other basic chemicals from neighboring plants.
4. Good level construction land at the site.
5. Natural gas, plentiful water supply and TVA electric power.
6. Illinois Central R.R. and navigable Tennessee River. Near geographical center of the U.S. Favorable rates to all major markets.
7. Modern housing and school facilities. Excellent industry-labor relations record.

A complete up-to-date report of the facilities and advantages of Calvert City is now available. Write National Carbide for a copy of "Industrial Resources, Calvert City, Kentucky". Prepared by the Joint Civic Industrial Committee of Calvert City and the Agricultural and Industrial Development Board of Kentucky.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND . . .



**National Carbide Company**

General Offices: 150 East 42nd Street, New York 17, New York

Plants: Louisville, Ky., Calvert City, Ky., Keokuk, Iowa, Ivanhoe, Va.



NATIONAL CARBIDE COMPANY is a division of AIR REDUCTION COMPANY, INCORPORATED • Principal products of other divisions include: AIRCO — industrial gases, welding and cutting equipment and acetylenic chemicals • OHIO — medical gases and hospital equipment • PURECO — carbon dioxide, liquid-solid ("DRY-ICE") • COLTON — polyvinyl acetates, alcohols, and other synthetic resins.

# For Your Polyethylene/ Packaged Cosmetics

*Tested Custom-Built  
Fragrances*

Have you wanted to package your cosmetic product in practical, light weight polyethylene... but feared the effect of fragrance materials upon it? The D&O Perfume Laboratories have just completed a research project aimed at determining the permeation rate of its entire repertoire of raw materials and finished compositions. This work, resulting in the accumulation of data concerning ingredient weight loss and container deformation has enabled D&O to develop fragrances which can be offered with confidence to the cosmetic industry for use in polyethylene packaged cosmetics, including anti-perspirant sprays, creams, lotions and shampoos. Individual development will be done with your polyethylene packaged product in the D&O Perfume Laboratories. Consult D&O.



**DODGE & OLcott, INC.**

180 Varick Street, New York 14, N. Y.

Sales Offices in Principal Cities

ESSENTIAL OILS • AROMATIC CHEMICALS  
PERFUME BASES • FLAVOR BASES  
DRY SOLUBLE SEASONINGS

## ADMINISTRATION

trying to upset the 1921 Antidumping Act. But it appears that the importers will get their day in court, nevertheless. The three-judge tribunal turned the case over to a one-judge district court "for appropriate action," with the comment that the constitutionality of one section of the act should be probed. Under that section, according to the importers, they would be punished retroactively to April 21, '54, for acts that they were not warned about until last summer. The government—backed by domestic producers—holds that the 35-year-old law serves as a standing warning to all importers that certain acts draw certain penalties.

**Vitamin Patent Suit:** Under way in federal district court at Roanoke, Va., is Merck & Co.'s patent suit against Olin Mathieson Chemical Corp., in which Merck is asking an injunction to keep OM from producing vitamin B-12. Merck also asks for an accounting of profits and a judgment for alleged damages, contending that OM infringed a Merck patent by making and selling the product. First witness was Du Pont biochemist Thomas Wood, formerly with Merck, named in the patent as inventor.

**Licenses Lifted:** The U.S. Bureau of Foreign Commerce—after giving the firm an extra chance to clear itself—has lifted U.S. export license privileges of Union Europeene de Produits Chimiques (Paris). The company had exported 100 tons of borax and transshipped it into East Germany.

## LABOR

**Union Advantage Claimed:** In plants making industrial chemicals, unionized employees' average hourly wage rate is 17¢ higher than that of production and maintenance workers at nonunion plants. So says Research Director E. E. Phelps, of Oil, Chemical & Atomic Workers (AFL-CIO), who bases this figure on an analysis of the wage survey conducted in this segment of the industry last year by the U.S. Bureau of Labor Statistics. Phelps says that the highest wage average in any one locality was the \$2.36/hour on the Texas Gulf Coast, and that this was because of the high wage pattern established there by the petroleum companies. The second highest local wage average—\$2.34/hour at Charles-



**HENRY KAISER:** For new aluminum plant, a 'strictly local' hiring plan.

ton, W. Va., and vicinity—was ascribed to the companies' efforts "to foster their company unions and prevent bona fide union organization."

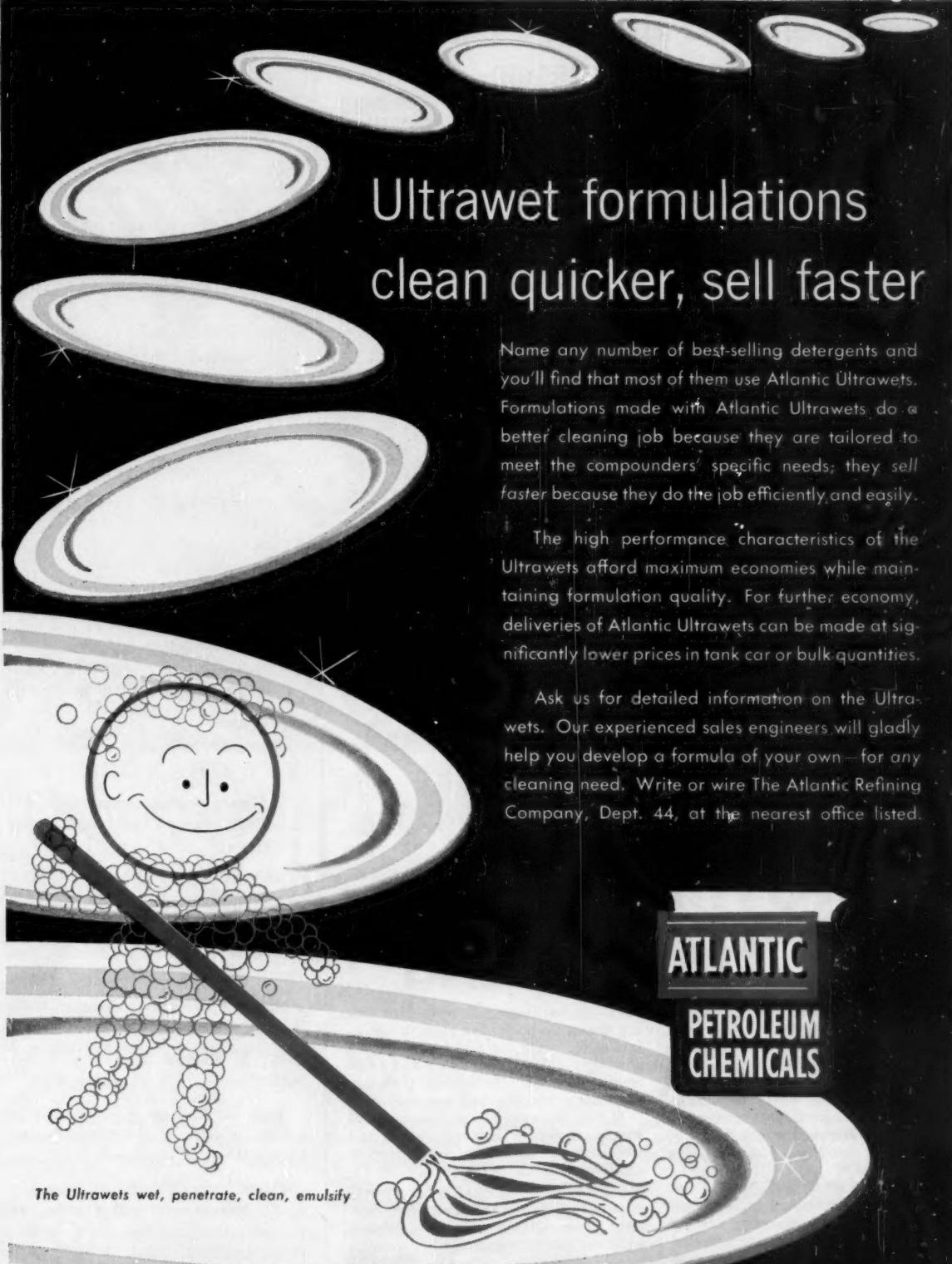
**50-Mile Limit:** Industrialist Henry Kaiser has prescribed a "strictly local" hiring policy for Kaiser Aluminum & Chemical Co.'s new aluminum reduction plant to be built near Ravenswood, W. Va. A Kaiser spokesman has told people in that area that the company plans to employ and train only persons living within a 50-mile radius of Ravenswood.

**Harder Bargaining:** Labor contracts, it seems, aren't so smoothly negotiated in warm weather. Several strikes have cropped up recently, and extended bargaining appears to be in prospect at other plants.

- Last week, United Steelworkers (AFL-CIO) presented new contract proposals to Aluminum Co. of America. It was expected that this union would seek for its 17,000 aluminum workers the same gains that it has asked of the big steel companies.

- Although employees at five other American Viscose Corp. plants have approved the same three-year contract offer, the company's workers at Parkersburg, W. Va., have turned it down, demanding higher benefits. The offer includes a 4% wage increase next year, a noncontributory pension plan, and an increase in insurance benefits.

- At South Charleston, W. Va., a



## Ultrawet formulations clean quicker, sell faster

Name any number of best-selling detergents and you'll find that most of them use Atlantic Ultrawets. Formulations made with Atlantic Ultrawets do a better cleaning job because they are tailored to meet the compounders' specific needs; they sell faster because they do the job efficiently and easily.

The high performance characteristics of the Ultrawets afford maximum economies while maintaining formulation quality. For further economy, deliveries of Atlantic Ultrawets can be made at significantly lower prices in tank car or bulk quantities.

Ask us for detailed information on the Ultrawets. Our experienced sales engineers will gladly help you develop a formula of your own—for any cleaning need. Write or wire The Atlantic Refining Company, Dept. 44, at the nearest office listed.

**ATLANTIC**  
**PETROLEUM**  
**CHEMICALS**

*The Ultrawets wet, penetrate, clean, emulsify*

Philadelphia, Providence,  
Charlotte, Chicago

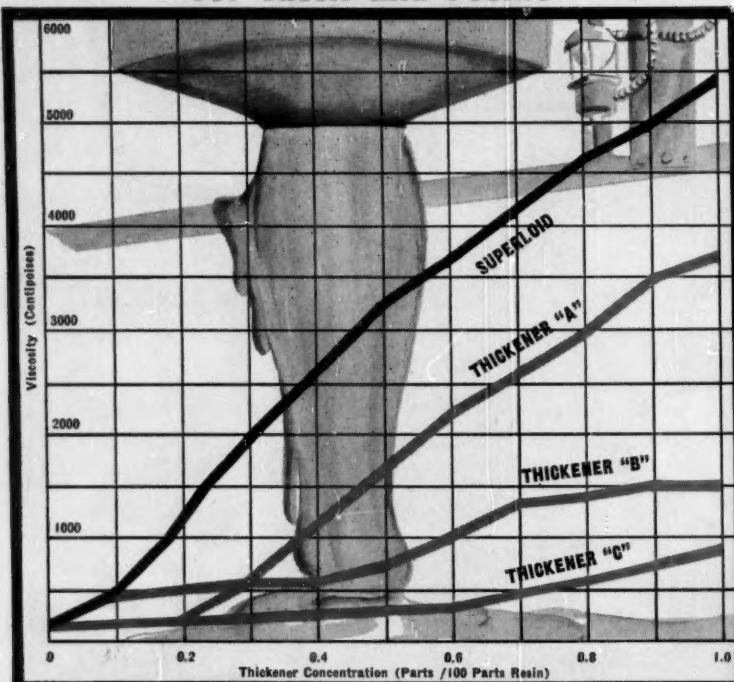
In the West  
L. H. Butcher Co.

In Canada Naugatuck Chemicals  
Division of Dominion Rubber  
Company, Ltd.

In Europe  
Atlantic Chemicals SAB,  
Antwerp, Belgium

In South America  
Atlantic Refining Company  
of Brazil, Rio de Janeiro

## Never before so efficient a thickener for latex and resins



# SUPERLOID PROVES 61% SUPERIOR TO OTHER THICKENERS

This remarkably effective thickening agent produces desirable body and substantially improves working properties of latex and resin preparations. A highly efficient binder and stabilizer, Superloid prevents water separation and holds filler ingredients in improved suspensions. Especially effective for maintaining stability of dilute latex systems!

Easy to use, Superloid aids film formation and improves spreading characteristics. Provides viscosity control to meet precise penetration requirements. It reduces impregnation, prevents shrinkage patterns in thin coatings and films.

Superloid measurably improves processing in such diverse applications as: bodying of resin and latex adhesives for better working properties and improved spread; conditioning of latex

for fabric backing applications; imparting desirable body and workability to latices for paper and textile sizings and coatings; and in other latex and resin applications for thickening, bodying, stabilizing, bonding and suspending.

If your latex or resin process or processing requires a thickening agent and stabilizer, Superloid may well test most efficient for your application.

**YOURS ON REQUEST: FREE**  
Superloid Sample and Technical Bulletin yours without obligation. Please write our nearest regional office today.

**SUPERLOID**  
**PRODUCT OF KELCO COMPANY**

120 BROADWAY, NEW YORK 5, NEW YORK  
20 N. WACKER DRIVE, CHICAGO 6, ILL.  
530 W. SIXTH ST., LOS ANGELES 14, CAL.  
CABLE ADDRESS: KELCOALGIN — N. Y.

## ADMINISTRATION

strike by District 50, United Mine Workers, has closed the Westvaco Chlor-Alkali Division plant of Food Machinery & Chemical Corp. The 915 union members (out of 1,200 plant workers) have rejected the company's offer of a 12¢ across-the-board hourly wage rise and an additional 1¢ in hospitalization and surgical benefits.

- About 1,500 employees were on strike for two days at Monsanto Chemical Co.'s John F. Queeny plant at St. Louis. The dispute concerned a company plan to cut one man from each of four swing-shift crews of four men each and reassign the four displaced workers to other jobs in the plant. Pending settlement, all 16 shift workers have been transferred to other work.

- Members of United Rubber Workers (AFL-CIO) have launched a strike against Congoleum-Nairn, a major producer of floor coverings, in support of contract demands.

- At Pasadena, near Houston, Tex., a strike by about 100 hoisting engineers has interrupted construction work on Phillips Chemical Co.'s polyethylene plant. Reportedly at issue: discharge of a union shop steward on another construction project.

## KEY CHANGES

**A. Bruce Boehm**, to executive vice-president, Enjay Co., Inc. (New York).

**Jack Tielrooy** and **Robert S. Ray**, to directors, Brea Chemicals, Inc. (Los Angeles).

**Chester F. Smith**, to director, van Ameringen-Haebler, Inc. (New York).

**Clarence Bremer**, to director, Oakite Products, Inc. (New York).

**W. B. Carroll, Jr.**, to president, Belle Chemical Co. (Reading, Pa.).

**John W. Hall**, to vice-president in charge of sales, and director, Potash Co. of America (Carlsbad, N.M.).

**David Rockefeller**, to director; **J. W. Keener** and **Arthur Kelly**, to executive vice-presidents; **B. F. Goodrich Co.** (Akron, O.).

## DIED

**Percival Lea Dewhurst Perry**, 78, director, Firestone Tire & Rubber Co. (Akron, O.), at Nassau, Bahamas.



C. E. Kaufman (left), Product Development Manager, Calgon, Inc., discusses the properties of the Pluronics with Ralph N. Thompson, Research Manager.

## "Pluronics offer a combination of properties not available in any other single surfactant"

—Ralph N. Thompson, Research Manager, Calgon, Inc.

"We manufacture products for treating water from source to disposal," relates Calgon's Research Manager Ralph N. Thompson.

"In our various research activities, we have been, and are now, thoroughly evaluating the Pluronics—Wyandotte's unique series of surface-active agents.

"We have established that the Pluronics have a relationship . . . one grade to another. Consequently, by evaluating the different grades, we've found that combinations of properties can be obtained with Pluronics which are not obtainable in any other single surfactant by itself.

"To date, two of the properties

of the Pluronics have been sufficiently unique to enable us to develop one completely new product, as well as to revitalize and improve one of our present important products."

Perhaps your products can be improved using a Pluronic.\* We at Wyandotte have recently compiled a new "Pluronic Grid," whereon the property trends of the Pluronics are plotted.

By studying these trends, the formulator may select those Pluronic grades with the best balance of properties for his application . . . eliminating random testing, saving valuable research time. This organized approach does not, how-

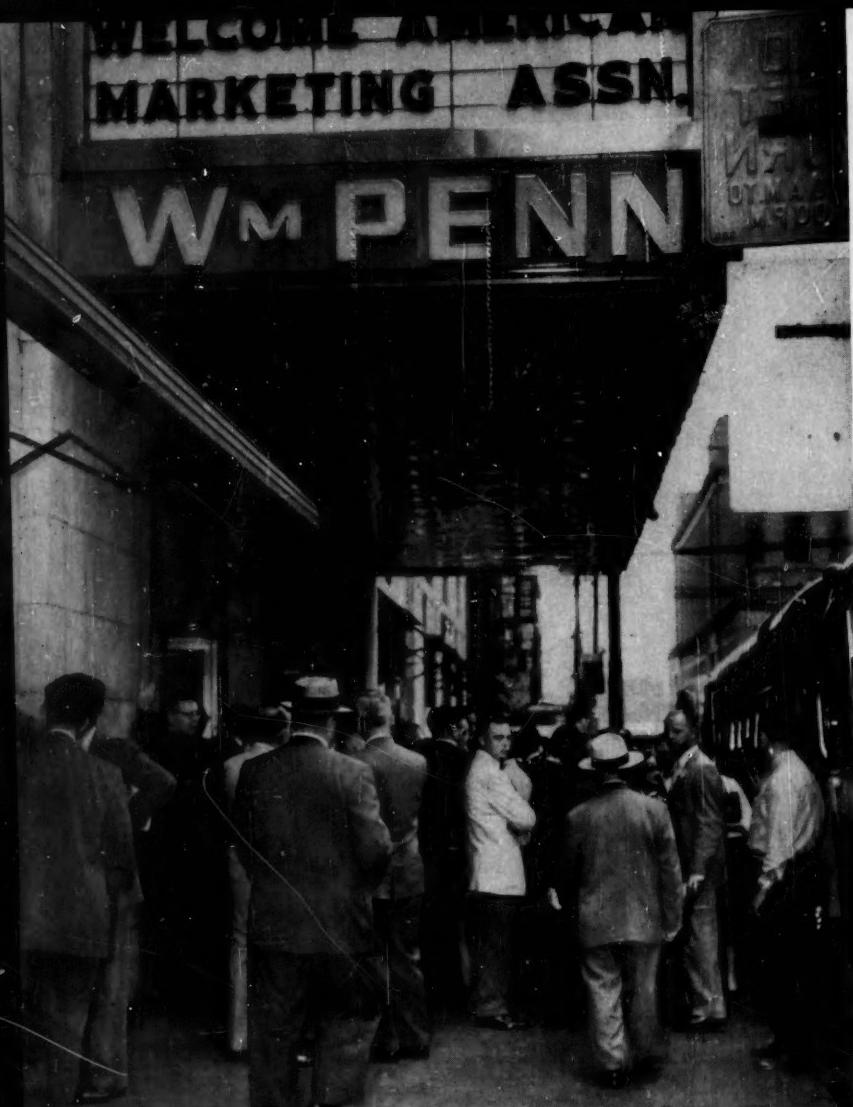
ever, eliminate the need for evaluation of the Pluronics in your own laboratories. Write today for samples and your free "Pluronic Grid." *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

\*REG. U.S. PAT. OFF.

**Wyandotte**  
**CHEMICALS**

MICHIGAN ALKALI DIVISION  
HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine  
Muriatic Acid • Calcium-Carbonate • Calcium Chloride  
Glycols • Chlorinated Solvents • Synthetic Detergents  
Other Organic and Inorganic Chemicals



## Plot for Product Policy

The growth-minded chemical industry got a few tips last week on how to handle the lifeblood of expansion—new products. The tipster: Richard J. Coveney, vice-president of Arthur D. Little, Inc.

Speaking to a large cross section of distribution executives at the National Conference of the American Marketing Assn. (in Pittsburgh), Coveney called emphatically for a flexible product policy, continuous study of market data, wider use of new sales tools.

At the core of Coveney's approach to new product introductions is the "grid concept." Its total framework embraces products and product lines for 10 years ahead, has the coordinates of marketing skill and technological development.

First step in making a grid is a thorough analysis of the company's skills in marketing, research, engineering, production and finance.

Distribution channels available or obtainable can be represented as horizontal rows. Vertical rows represent product lines already established or acquirable, and research and development know-how. Resultant compartments then show what is available now, what products can logically be developed to "fill the holes" in the 10-year plan. Additional refinement: warning flags for products in danger of obsolescence within 10 years.

Successful product policy, believes Coveney, demands a systematic method of information review. All data relating to industries in which the

## SALES

company has a stake should be presented on a "continuing basis to marketing management." This includes:

- Actual and potential market changes.
- Changes in competition.
- Changes in discount structure.
- Relevant technological development.
- Customer reaction.
- Changes in distribution methods.

Mere study, however, is not enough. "Implications of the data, together with recommendations, should be reviewed by marketing management; once every 9 to 15 months, a report with recommendations should be prepared."

**New Tools:** Advances in the science of marketing will strongly influence product policy. Behavior or motivation research is one tool destined to grow markedly in both use and value. Current key interest point: the risk-vs.-reward decision that customers make just prior to buying or not buying a new product.

Although the methods are yet to be found, Coveney feels that the "important market variables that surround the risk-reward calculation can be isolated, can be moved into the laboratory for study under controlled conditions." Recent studies indicate that:

- The individual has a point of view that relates to all risk-taking, whether it be driving a car, crossing a street or considering a new product.
- Individuals vary in risk-taking behavior, and it's likely that such individual differences can be measured.
- Changes by an individual in his pattern of risk-taking depends on whether he thinks he is winning or losing the game.

Behavior research is only one application of the social sciences to business. Cautioning executives not to be skeptical of such new techniques, Coveney stressed that "business is essentially the interaction of different human beings, of presently unpredictable behavior. We must know more about how people react in business situations."

Product planning, continuing study of marketing information and social science business tools tote up to a flexible marketing policy. That's the way, believes Coveney, that a company can help itself stay in the competitive forefront.



**today**, there is a safer, simpler, surer way to store gas. The antiquated bell jar was the prototype of many gasholders still in use. The modern Wiggins gasholder, using a 100% dry seal, is the first successful departure from "bell jar" construction.

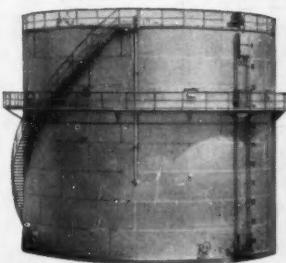


## WIGGINS GASHOLDER

BY GENERAL AMERICAN

Only modern Wiggins Gasholders free you from weather worries and operating costs. More than 150 satisfied users now enjoy the advantages (no water, tar or grease) that this 100% dry-seal gasholder offers. The Wiggins Gasholder can be built to any capacity . . . with remarkable savings in construction cost. If there's a gas storage structure in your firm's future, write today for full information.

*for chemical process and industrial gases*



**GENERAL  
AMERICAN  
TRANSPORTATION  
CORPORATION**

135 South LaSalle Street  
Chicago 90, Illinois  
Offices in Principal Cities



MEDICAL NEWSPAPERS: Ciba and Upjohn report medical news to doctors.

## Sales Pitch 'Extra'

Two pharmaceutical firms—Ciba and Upjohn—are currently reaping big benefits from a relatively new off-beat promotional venture—medical newspapers, designed to provide doctors with a quick, convenient medium by which to keep abreast of the latest medical developments. The papers have been on the scene less than a year, are proving to be a good way for drug companies to win the medical profession's goodwill—and business.

Ciba and Upjohn see the papers as an effective way to sell to doctors, having found it increasingly difficult to sell to them via the usual direct mail route—the average doctor receives some 30 pieces of direct mail a day, finds time to read only a few.

Medical newspapers, the firms point out, give the doctor something he hasn't had before—up-to-date information about his profession—and at the same time, admittedly, plant a subtle sales message.

First in the field was *Medical News*. Owned and operated by a New York advertising firm, Sudler & Hennessey, it is licensed exclusively to Ciba. But though the latter gets a prepublication peek at what goes into each issue of the biweekly, it doesn't—except for checking technical accuracy and legal matters—impose any editorial restrictions on the staff's handling of articles.

The publication gives little coverage of pharmaceutical companies—the news is chiefly about the medical profession. In fact, since inception of the paper, Ciba has been mentioned only twice—in minor stories.

Each issue of *Medical News* totals 12 pages, is printed on newsstock, has 80% editorial content, 20% advertising. Only Ciba advertising is included. Ads are specially prepared for the paper, are not reruns of ads in medical journals or other media. Reason: reruns would not fit in with the newspaper format. Queries received by *Medical News* regarding ads appearing in it are passed on to Ciba's regular sales force for servicing.

First issue of the paper came out last September, was mailed to almost half of the 200,000-plus registered physicians in the U.S. Business reply cards were included in the first eight issues, inviting doctors to place themselves on a permanent mailing list. Those who didn't return the card were dropped from the mailing list—giving Ciba a circulation of only those physicians who want the publication. Response was tremendous. Over 40,000 answered after receiving the first three

issues. Present circulation: about 94,000 to physicians, an additional 6,000 to allied groups.

Foreign circulation is surprisingly large. English-language copies are distributed regularly by Ciba to readers in Switzerland, Canada and Scandinavian countries. In addition, the U.S. Information Service sends copies to its libraries in more than 80 countries.

By adhering to the original decision to keep the publication as objective as possible, Ciba has earned additional prestige. Other publications (*Time*, *The Boston Traveler*, *Illustrated London Times*) have reprinted some *Medical News* issues *in toto*.

*Scope Weekly*, the only other medical newspaper, is sponsored by Upjohn and is produced for them by a New York advertising firm, Williams, Douglas, McAdams, Inc. *Scope* is a weekly, totals 16 pages at least per issue. It has a staff of about 20.

Though launched later (last January), *Scope* didn't copy *Medical News*. Objectives of the two are certainly similar, but big differences are obvious in editorial policy and physical appearance. (*Scope* has a "Sunday supplement" look rather than a newspaper makeup.)

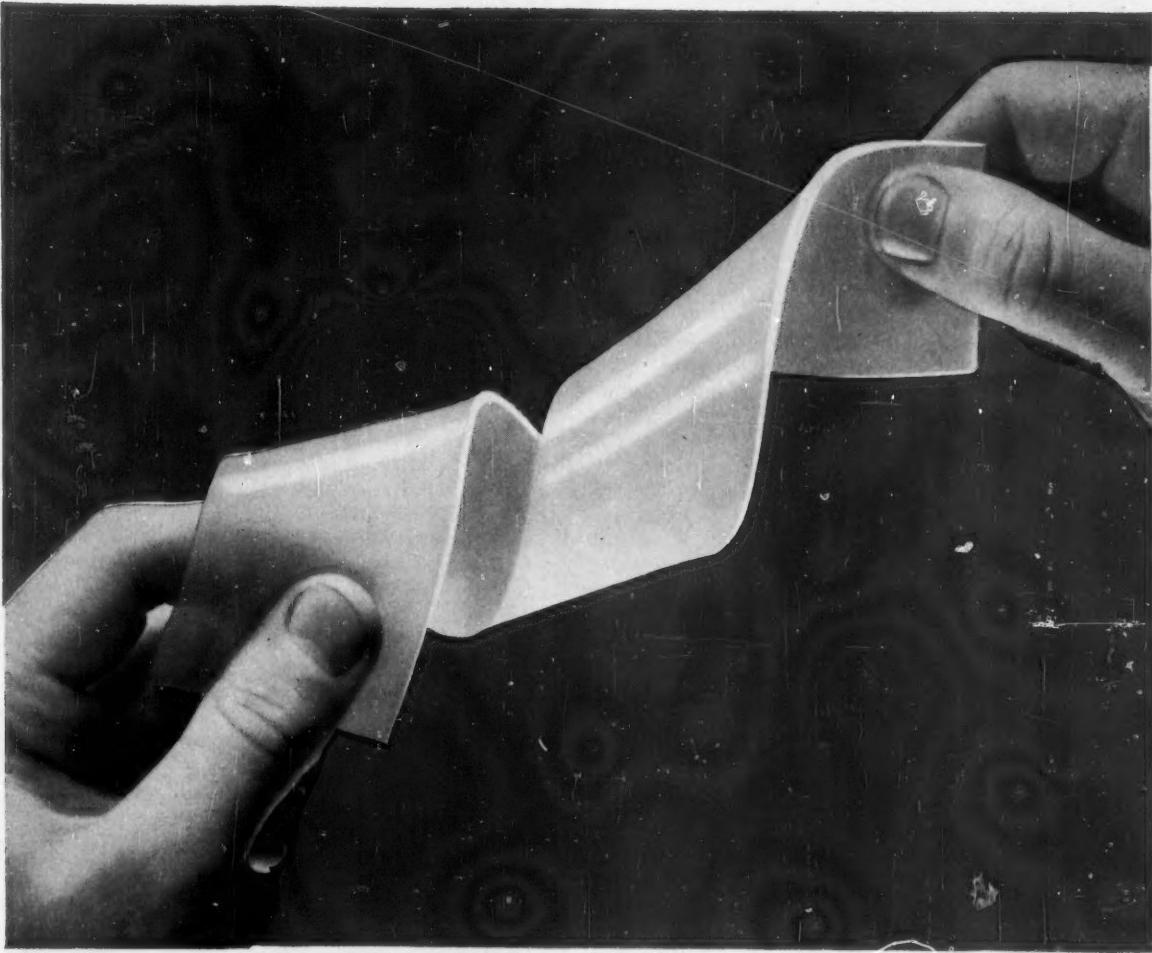
While Ciba soft-pedals its own drug developments, Upjohn—besides using about 30% of total space for its ads—includes news about itself, liberally distributed throughout the editorial section of the paper. Also, *Scope* leans more towards nonnews articles, relies heavily on features, columns, picture-stories, quizzes, etc.

*Scope's* circulation is around 100,000, with few copies going overseas. A cross section of the medical industry, culled from standard mailing lists, makes up the readership.

Though editors of both papers say

"Medical News is a doctors' newspaper specifically designed to bring to the practicing physician an accurate, condensed, on-the-spot report of medical developments as they are happening. No previous publication was equipped to perform this service for the medical profession. In addition, it gives us a new institutional advertising medium in which specially prepared ads remind the doctors of Ciba's pharmaceutical preparations."

James R. Beattie, Ciba director of public relations.



## For Permanently Plasticized Copolymers . . . Rohm & Haas Acrylate Monomers

When you copolymerize Rohm & Haas acrylate monomers with vinyl chloride, vinyl acetate, vinylidene chloride, acrylonitrile, or styrene you get permanent plasticization. The primary chemical bonds which are formed mean that the acrylates cannot be extracted by even the strongest solvents and cannot migrate or volatilize.

As a result, films and coatings remain flexible

longer and withstand attack by heat and ultraviolet light.

Acrylate copolymers generally require lower processing temperatures, too, forming films readily because of increased flow. Often, copolymerization with acrylate monomers may be the only plasticization necessary. External plasticizers can still be added if desired. Write for your detailed booklet.

### ROHM & HAAS ACRYLATE MONOMERS

Methyl acrylate	Ethyl methacrylate
Ethyl acrylate	Hexyl methacrylate
Butyl acrylate	Decyl-octyl methacrylate
2-Ethylhexyl acrylate	Lauryl methacrylate
Methyl methacrylate	Stearyl methacrylate
Butyl methacrylate	Glacial methacrylic acid



Chemicals for Industry

**ROHM & HAAS  
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

# Effective now reduced prices on **VINOL** **POLYVINYL** **ALCOHOL**

**for Better Products at  
Even Lower Cost**

Down go the prices on Vinol Polyvinyl Alcohol. Up go the horizons on exciting new uses . . . water soluble films for the latest in packaging . . . new, less expensive coatings for paper, textiles, and leathers. And Vinol Polyvinyl Alcohol now enjoys wider use than ever before as an emulsifier in adhesive formulations.

Let Colton chemists show you how your product can be improved. Write today for samples and data to Dept. A52.

#### SPECIFICATIONS

VINOL Polyvinyl Alcohols now available in the following grades:

PA-5, PA-20, PA-40  
(88% hydrolyzed)

Low, medium and high viscosity partially-acetylated grades.

FH-100, FH-400, FH-500, FH-600  
(99+% hydrolyzed)

Low, medium, medium high and high viscosity fully-hydrolyzed grades.

**COLTON CHEMICAL  
COMPANY**

A Division of Air Reduction Company, Inc.  
1747 Chester Avenue • Cleveland 14, Ohio  
Sales Offices and Warehouse Facilities  
Throughout U.S.

Export: Airco Company International, New York 17, N.Y.

Products of other divisions of Air Reduction Company, Inc. include: AIRCO—industrial gases, welding and cutting equipment; PURECO—carbon dioxide, liquid-solid ("DRY-ICE"); OHIO—medical gases and hospital equipment; NATIONAL CARBIDE—pipeline acetylene and calcium carbide.

#### SALES

they have no way of knowing if their circulations overlap, chances are that there's a remarkable similarity in both lists. A pharmaceutical research firm, Noyes and Sproul, in a survey this year, discovered that 52% of the doctors in the U.S. read no medical newspapers. Inevitable conclusion: the two papers are hitting approximately the same group of doctors. Another conclusion: the market is only half-tapped.

Some other facts about medical newspapers turned up by the survey: 24% of doctors prefer learning about new pharmaceutical products in these papers; 22% rate them tops for carrying articles about established products.

A somewhat left-handed tribute to the medical newspapers was given by Dr. Morris Fishbein, former head of the American Medical Assn., at the recent convention of that group in

Chicago. "I am startled," he said, "by the sudden evolution of three magazines that hope to keep the doctor up-to-date with what is going on in medicine—namely *Scope*, *Spectrum*\* and *Medical News*. The periodicals differ, and . . . there's no doubt that each of these will appeal to a special type of intellect."

Though a relatively expensive way to get a sales message to customers, these medical newspapers are obviously being read appreciatively by doctors and others. If response to this subtle sales tool is as enthusiastic in the future as it has been in the past, both Ciba and Upjohn may well have picked up a real bargain in medical communication.

\**Spectrum* is more a journal than a newspaper, covers mostly clinical studies. Put out by Pfizer, it's a 24-32-page biweekly. It formerly appeared as an insert in the *Journal of the American Medical Assn.*, is now mailed directly to physicians.



## Target for Aerosols

AEROSOLS—boon to push-button convenience—are always finding rich new areas for exploitation. Here, a demonstrator for Allied's General Chemical Division shows one of the latest uses for the firm's line of Genetron propellents: aer-

osol by powder. Fire-fighting compounds, reflective paint, topical pharmaceuticals and cosmetics, and spray-on bandages are among the other markets that the propellant manufacturers are hopefully cultivating.



## Red-hot recipe for tougher tank cars



Typical DURADOME—designed  
for formaldehyde service

WHEN heavy-gauge steel is formed and welded into a tank car tank . . . certain internal stresses develop which tend to weaken the metal. That is why ACF tanks are "popped into the oven" to relieve these stresses.

Each tank is scientifically heated under controlled conditions. This results in a tank of uniform strength which is ready to resist the forces of load and impact which occur during transportation.

When you're looking for the toughest tank cars ever built, look to Shippers'. We are the exclusive sales agent of ACF-DURADOME tank cars for industry. You'll find a nationwide network of Shippers' Car Line offices and repair shops ready to serve your transportation needs.

Whatever your tank car requirements may be, better talk to Shippers' . . . and get the benefits of modern tank car service!

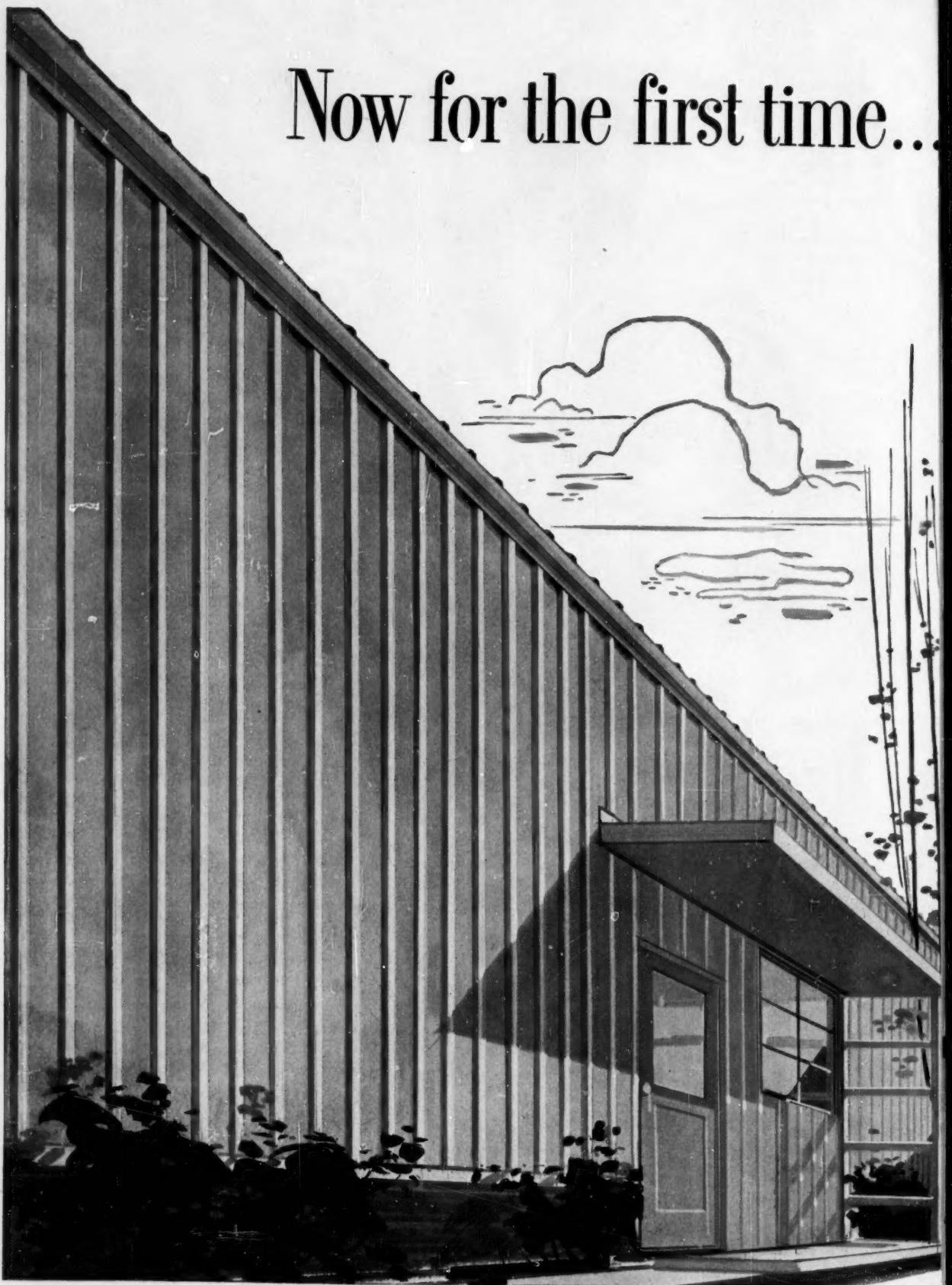


### SHIPPER'S CAR LINE

Division of **ACF INDUSTRIES, Incorporated**  
**30 Church Street, New York 7, N.Y.**

CHICAGO, ILL. • HOUSTON, TEX. • SAN FRANCISCO, CAL. • MILTON, PA. • EAST ST. LOUIS, ILL. • SMACKOVER, ARK. • TULSA, OKLA. • NORTH KANSAS CITY, MO. • RED HOUSE, W.VA.

# Now for the first time...



# all-steel buildings with a luxury look—yours with the new *Stran-Satin* wall

The eye-appeal of far more expensive materials, plus the strength and low cost of steel! That's what you get in the new Stran-Steel Rigid Frame building line with exclusive *Stran-Satin* wall. *Stran-Satin*, a new satin-finish steel developed by National Steel, gives these buildings a beauty and attractiveness never before achieved in pre-engineered metal buildings.

*Stran-Satin* beauty is more than skin deep. Spangle-free *Stran-Satin* provides a durable, non-corrosive, full commercial zinc coating, plus a new rib design that combines strength with advanced styling.

This exclusive exterior wall makes Stran-Steel's new clear-span Rigid Frame buildings the most attractive metal buildings available for manufacturing or processing, for warehousing or distribution, for service or repair shops. Five clear-span widths—40, 50, 60, 70 and 80 ft.—offer you unlimited flexibility for the size and shape building best suited to your needs.

With these good-looking Stran-Steel Rigid Frame buildings you get quality construction, fast erection, easy expansion. For more information call your local Stran-Steel Buildings dealer or send coupon.

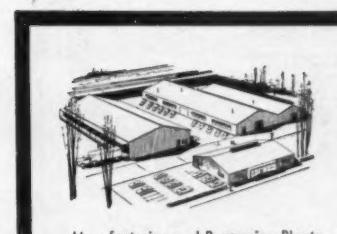


## STRAN-STEEL CORPORATION

Ecorse, Detroit 29, Michigan • A Unit of



Open Clear-Span Interiors for . . .



Manufacturing and Processing Plants



Warehousing and Distribution Centers

### REGIONAL OFFICES:

Atlanta 3, Ga.  
206 Volunteer Bldg.  
Cleveland 15, Ohio  
20950 Center Ridge Rd.  
Detroit 29, Mich.  
Tecumseh Rd., Ecorse  
Houston 5, Texas  
2444 Times Blvd  
Minneapolis 4, Minn.  
708 S. 10th St.  
N. Kansas City 16, Mo.  
1322 Burlington  
San Francisco 5, Calif.  
215 Market St.  
Washington 6, D.C.  
1200 18th St., N.W.  
56-88-38A

STRAN-STEEL CORPORATION, ECORSE, DETROIT 29, MICHIGAN

- Please send me the new Stran-Steel Buildings Catalog.  
 Please have your representative contact me.

Name \_\_\_\_\_

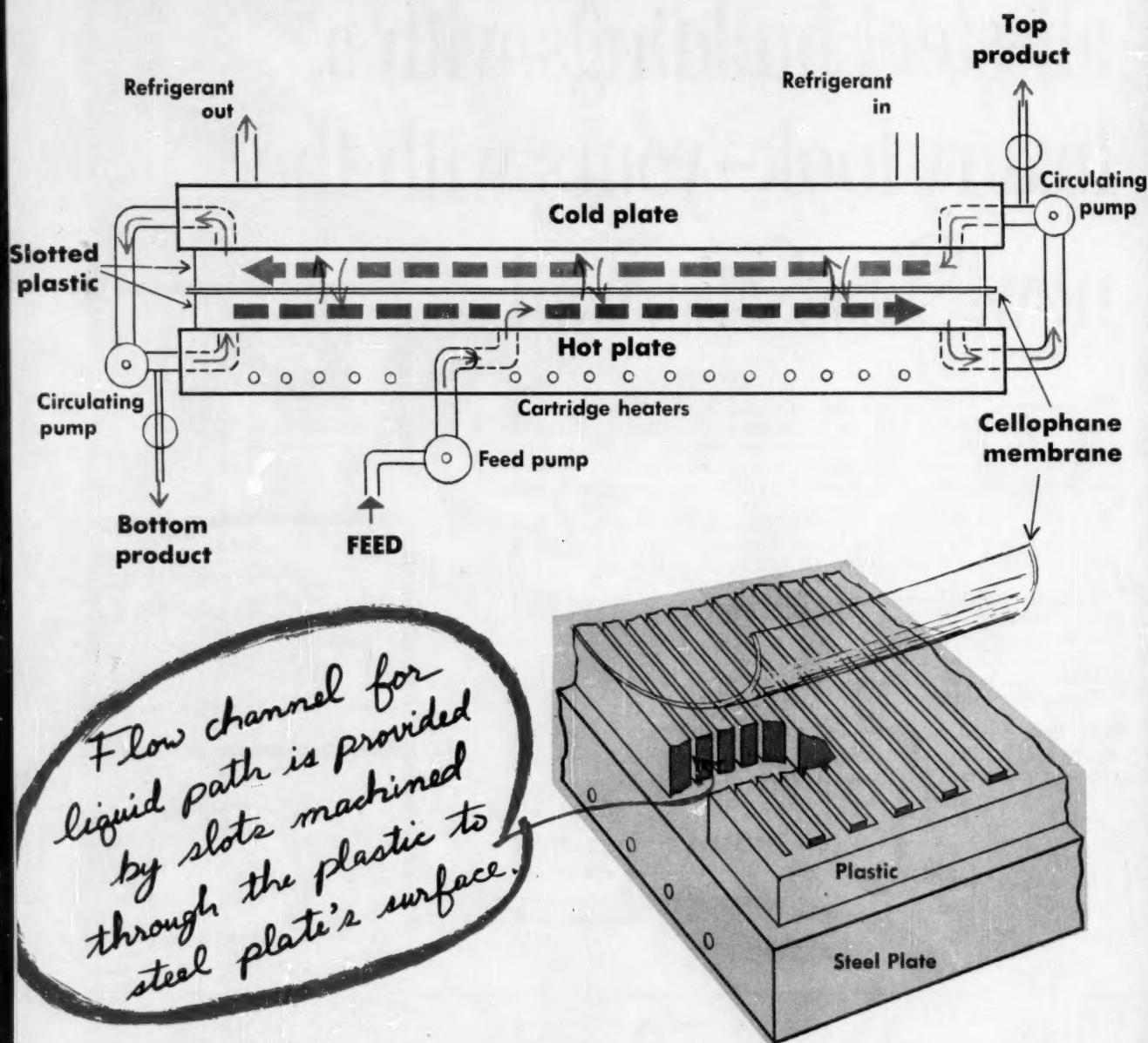
Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

H

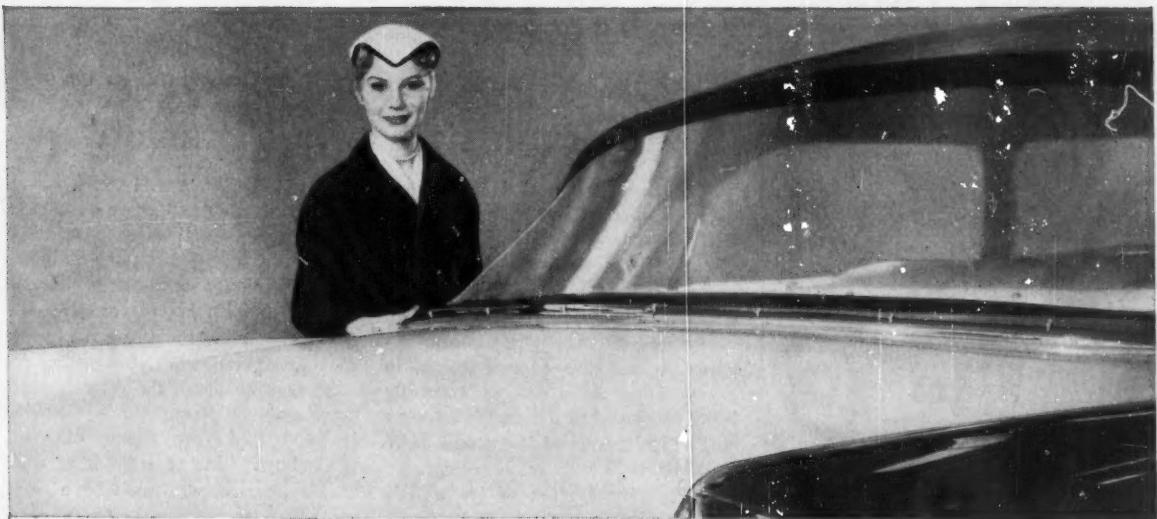
# PRODUCTION



The Jury 'sandwich' uses pumps for forced circulation, cellophane membrane to separate hot and cold flow. By compensating for the so-called 'forgotten effect' . . .

## It's Stripping Confusion from Thermal Diffusion

*Story continues on p.54*



## STABILITY of VINYL WINDOWS



## FIDELITY in VINYL RECORDS

are assured when you manufacture with Enjay Oxo Alcohols

Vinyl rear windows in convertibles or vinyl phonograph records . . . and a large number of today's other wonderful, new vinyl products are made from plasticizers using Enjay Oxo Alcohols.

Whatever your product, you can always count on Enjay—the world's largest supplier of Oxo Alcohols—for uniform high quality.

The Enjay Laboratories are at your service to help solve technical problems related to the application or use of *any* Enjay product.

For detailed information, write or phone today!

**Enjay offers a diversified line of petrochemicals for industry:**

HIGHER OXO ALCOHOLS (Isooctyl Alcohol, Decyl Alcohol, Tridecyl Alcohol); LOWER ALCOHOLS (Isopropyl Alcohol, Ethyl Alcohol, Secondary Butyl Alcohol); and a varied line of OLEFINS AND DIOLEFINS, AROMATICS, KETONES AND SOLVENTS.

ENJAY COMPANY, INC., 15 WEST 51st ST., NEW YORK 19, N.Y. Other Offices: Akron, Boston, Chicago, Los Angeles, Tulsa



*Pioneer in  
Petrochemicals*

## PRODUCTION

**OFFERING  
THE  
FINEST  
IN  
MICROCRYSTALLINE  
WAXES**

**with  
MELTING POINTS  
from 140°F. to 220°F.**

**PENETRATIONS  
from 2 to 35**

**COLORS  
from white to black**

**SAPONIFICATION NUMBERS  
from 45/55 to 75/85**

**ACID NUMBERS  
from 10/20 to 40/50**

**BARECO  
WAX  
COMPANY**

DIVISION OF  
PETROLITE CORPORATION

The Bareco Wax Company division of Petrolite Corporation offers the widest selection of fine microcrystalline waxes for industrial applications now available.

If you have a wax problem, write or call



**BARECO WAX COMPANY**

BOX 330 KILGORE, TEXAS  
BOX 100 TULSA, OKLAHOMA

A DIVISION OF PETROLITE CORPORATION

*Story begins on p. 52*

### 'Strips Confusion from Diffusion'

Ask the experts how liquid thermal diffusion operates and chances are that each will give you a different answer. For the past two decades they've been trying to fathom the complex nature of this relatively unknown—and often confusing—phenomenon. Latest attempt to put this process riddle to practical use is a system currently being developed by a team of engineers at the University of Tennessee (CW Technology Newsletter, June 9).

Outstanding feature of U. of T.'s thermal diffusion process is the novel equipment conceived by S. H. Jury, associate professor of chemical engineering. A radical departure from the usual vertical thermo-gravitational columns, Jury's device employs a permeable membrane sandwiched between horizontal channels in the hot-and cold-wall surfaces (see illustration, p. 52).

The equipment has been operating for about one year, reportedly has given good separations with a variety of liquid mixtures. But most important, the results have closely approached those predicted by mathematical calculations. Edward Von Halle, a graduate student on a Du Pont fellowship,\* is continuing the studies, modifying and improving the original equipment.

From the results already in, Jury's "sandwich" appears to offer these advantages:

- Increased efficiency of separation. Convective mixing within the individual streams allows greater heat transfer than does the classic Clusius-Dickel column for the same temperature differential.
- The "forgotten effect" is eliminated: mixtures that could be separated only with extreme difficulty, if at all, in the C-D column can be separated efficiently in Jury's system.
- External circulating pumps afford greater control of process variables.

**Where Others Failed:** Growing emphasis on separating liquids that have practically identical molecular weights and boiling points has led several companies to try thermal diffusion where distillation and other methods

\*Though Du Pont granted the fellowship, choice of the thermal diffusion project was strictly Von Halle's. Du Pont has no further interest in the work beyond its option to have first crack at it.

have failed. For several years, Standard Oil of Ohio and other oil companies (e.g., Esso and Atlantic Refining) have been investigating the principle for upgrading oils. Most of this research has been highly secretive. But the companies indicate that some spectacular results have been achieved.

Though details of the petroleum researchers' equipment are lacking, it's believed that, for the most part, vertical cylindrical columns were used. This system—first utilized by a team of Germans, Klaus Clusius and Gerhard Dickel—consists of two concentric tubes. The inner one is cooled, the outer one is electrically heated. Liquid feed enters the narrow (about 0.02 in.) annular space between the tubes midway up the column.

**Forgotten Effect:** With gases and some inorganic aqueous solutions,† thermal diffusion proceeds pretty much as expected—i.e., the lighter molecules collect at the top of the column, the heavy ones at the bottom. But many liquids—particularly organics—punch holes in simple theory.

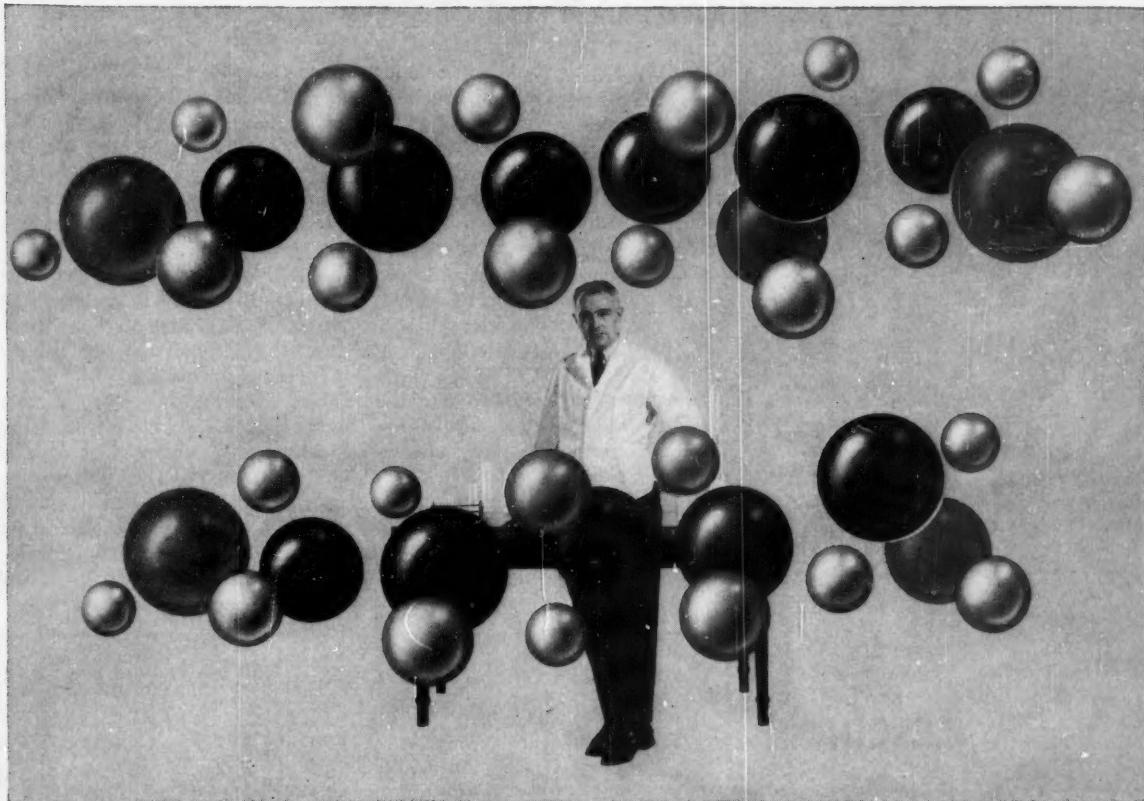
With a water-deuterium oxide mixture, for example, the light water collects at the top as expected. But in separations of water and ethanol, the lighter water molecules migrate toward the cold wall and the bottom of the column.

For many years, thermal diffusion experts suspected polymerization and convection-induced density changes as causes of the apparently abnormal separation. More recently, they have come to the conclusion that spatial configuration—and not just mass—of the molecules determines which way they will go.

But the real trouble spot, particularly in the early work, has been the "forgotten effect," so-called because experimenters failed to take it into account. By assuming that density is independent of concentration, that only temperature effects the separation, many experimenters became hopelessly bogged down.

But even allowing for the density-concentration gradient doesn't completely overcome the vertical column's

†The process was used to enrich the light isotope of uranium-235 at Oak Ridge during the early days of the atomic energy program.



*These* **CARBIDE POLYOLS**   
*can aid your search for better resins*

 **1, 2, 6-HEXANETRIOL**  $\text{CH}_2\text{OH} \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{CHOH} \cdot \text{CH}_2\text{OH}$

Urethane foams, produced by the reaction of polyesters made from 1,2,6-hexanetriol with diisocyanates, possess good resilience and flexibility.

Added benefits—Liquid 1,2,6-hexanetriol speeds mixing in polyester manufacture and eliminates sublimation often encountered with solid polyols during esterification.

 **1, 5-PENTANEDIOL**  $\text{CH}_2\text{OH} \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{CH}_2\text{OH}$

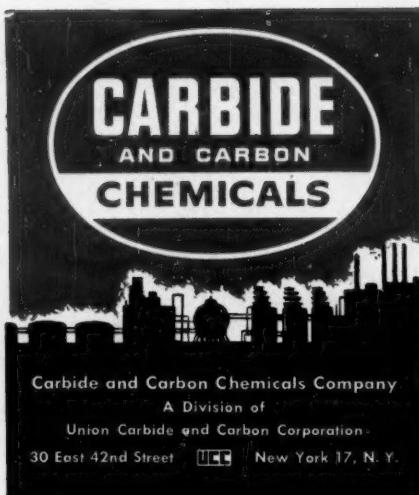
The terminal hydroxyl groups and long carbon chain make this CARBIDE polyol a promising intermediate for polyester resins. Absence of ether linkages improves resistance to degradation caused by heat and oxidation resulting from high temperature conditions.

These improved properties of polyesters based on 1,5-pentanediol should be of particular interest in the manufacture of magnet wire enamels and reinforced polyesters for structural applications requiring the greatest possible resistance to thermal degradation.

---

If you haven't evaluated these polyols, then write today for samples and technical data. Address—Carbide and Carbon Chemicals Company, Room 308, Dept. H, 30 East 42nd Street, New York 17, New York.

*In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.*



*Give your  
new\*  
product  
idea  
a  
lift —*

**Consult**  
**Evans**  
**Research**

... to help you choose the right materials. Success of your product depends on avoiding a weak link in the materials chain.

Evans Research, with a broad knowledge of all types of components, such as rubber, plastics, resins, and adhesives, can bring an objective viewpoint to bear on the overall problem. Thus you can be sure that the materials and processes recommended are the most efficient and economical.

Why not write us today? We'll be glad to discuss a possible cure for your materials specification headache.

\*Perhaps your present product can stand improvement.



**EVANS RESEARCH**  
and Development Corporation, Dept. W 21  
250 East 43rd St. New York 17, N.Y.

## PRODUCTION

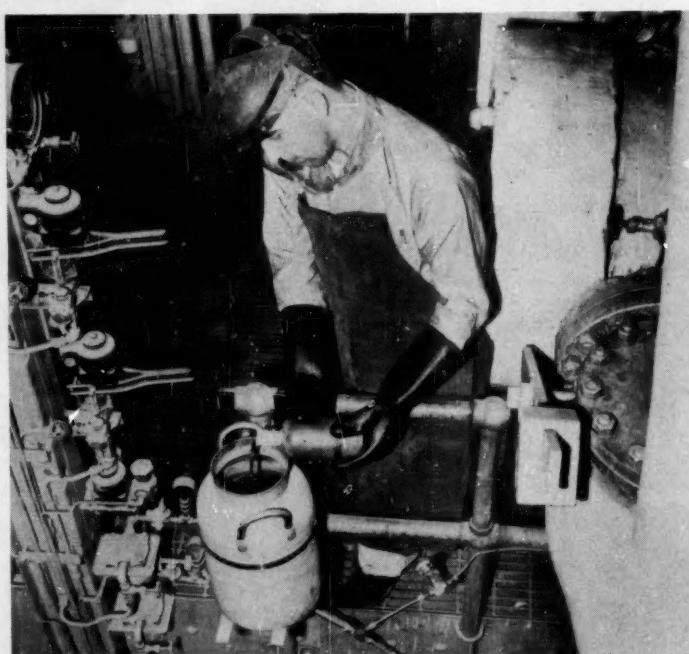
basic disadvantages. When solution density varies appreciably with concentration, convective velocity distribution becomes an extremely complicated function of wall spacing. Too, hot and cold walls must be close together (Sohio found 0.02-0.06-in. spacing best for continuous columns of practical height), so throughput is low. And, finally, since separation depends entirely on convection currents, operation of the vertical column is difficult to control.

**Separation Sandwich:** To eliminate the process's limitations, while providing more positive control, Jury installed a membrane and forced circulation to his horizontal separator. Jury's "sandwich" employs flat hot and cold plates, "buttered" with  $\frac{1}{16}$ -in.-thick epoxy resin of low thermal conduc-

tivity (Chrysler Corp.'s Cycleweld C-17). After curing, the resin is machined to provide matching  $\frac{1}{8}$ -in.-wide slots in a back-and-forth pattern on both plates. On the models built to date, channels from 70 to 100 ft. in length have been used on the 2x3-ft. plates.

The sandwich is completed by a 1-to 3-mil-thick cellophane membrane between the resin faces. Cartridge heaters supply heat to the bottom plate, while Freon is circulated through the top one for cooling.

The liquid feed is pumped into one of the channels at a point determined experimentally. Pumps at both ends of the unit circulate the stream countercurrently through the channels on either side of the membrane. At the same time, the temperature gradient causes the molecules to separate and



## Hydrazine for High Pressures

THE OPERATOR (above) is adding a new form of hydrazine to the water used in the Public Service electric generating station at Kearny, N.J. Tagged Scav-Ox, the new material is being introduced by Olin Mathieson; it's a 35% solution of hydrazine in water. As OM

sees it, the product retains all the advantages of hydrazine as an oxygen scavenger for boiler feed water, but is completely nonflammable. This, says the firm, means that hydrazine can now be used in high-pressure boilers, eliminating cumbersome handling precautions.

# 5 important reasons to buy

Baker

Sodium Hydroxide  
Potassium Hydroxide

## PELLETS

Extremely pure—essential for many processes.

Domestic Material—made by Baker men and methods.

Available in Tonnage—Baker is America's largest producer.

Economical—often saves steps in processing.

Convenient—free-flowing, easy to weigh, easy to pour.

Specify Baker caustic pellets, and you get more than an excellent product of highest purity—*You get the security of an assured, domestic supply direct from America's largest manufacturer.*

Other advantages: Baker's unequaled production facilities make it simple to order the most convenient, economical quantity for your operation. We can ship by the TON or Carload.

Baker production is geared to both quantity and quality. Baker Sodium Hydroxide and Potassium Hydroxide Pellets are white, extremely pure, low in heavy metals, chloride, carbonate, sulfate, phosphate, nitrogen and silica. The pellets are free-flowing, easy to pour, easy to weigh, easy to use. They'll simplify your handling operations, save you time and money.

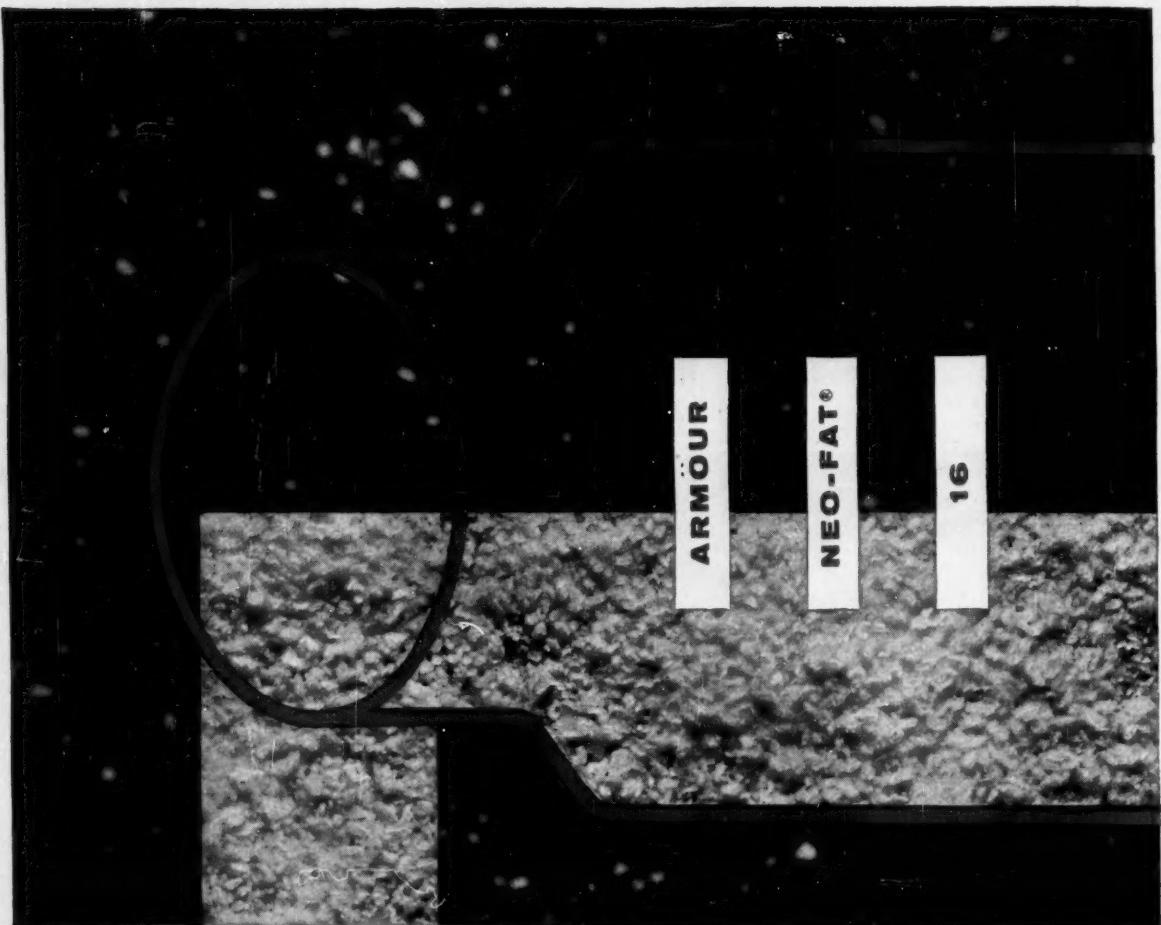
Baker supplies Sodium Hydroxide Pellets and Potassium Hydroxide Pellets in Reagent and U.S.P. grades.

WRITE FOR PRICES AND SAMPLES: Address J. T. Baker Chemical Co., Executive Offices, Phillipsburg, N. J.

**Baker Industrial Chemicals**

*"Purity by the ton"*





Another Armour First!

## Purest Palmitic Acid ever offered Commercially

**NEO-FAT 16**

95% Palmitic Content • Light Initial Color  
Excellent Color Stability • Minimum Iodine Value

SEND FOR INFORMATION AND SAMPLE TODAY

- 1 pound Sample of Neo-Fat 16.
- New 48 page brochure, "The Chemistry of Fatty Acids."
- New Specification Chart of the complete line of Neo-Fat Fatty Acids.

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ CW7



ARMOUR CHEMICAL DIVISION

© Armour and Company, 1355 W. 31st St., Chicago 9, Ill.

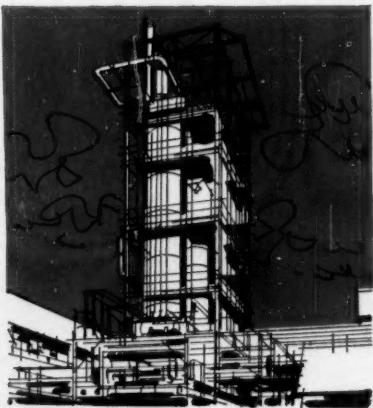
Fatty Acids • Aliphatic Derivatives • Industrial Oils

Armour research succeeds again! And you can benefit from this outstanding achievement by producing higher quality products!

Already Neo-Fat 16 has been found superior in the plastics industry, in the manufacture of metallic soaps, emulsifiers and esters, by textile chemical producers and by many other processors.

But see for yourself how this highest purity palmitic acid improves your products. Mail the coupon for a free sample!

SPECIFICATIONS	MIN.	MAX.	AVERAGE COMPOSITION PERCENT
Titer °C.....	56	59	Myristic (C-14)..... 1
Iodine Value.....	—	1	Palmitic (C-16)..... 95
Acid Value.....	216	220	Stearic (C-18)..... 4
Saponifiable Value..	216	221	Oleic (C-18) ..... Trace
Unsaponifiable %...	—	0.3	Animal or Vegetable Sources
Moisture %.....	—	0.2	
Color, 5 1/4" Lovibond	—	1.0R-5Y	
Heat Stability @ 200° C for 2 hrs..	—	2.0R-20Y	Available in flake or powdered form. Shipped in tank car or carload lots.



## Only Armour's 2-system Fractionation

can supply you with such  
a complete line of  
highest purity fatty acids  
tailored for ester manufacturing.

Only Armour uses fractional distillation and solvent crystallization to produce a complete line of uniform Neo-Fat fatty acids offering single components in purities as high as 96%. Yet you pay no premium in price. Advantages such as these make Armour your one best source for all fatty acids. In the list below, you'll find the specific Armour Neo-Fats that will help you produce the finest esters at the lowest cost. Write us for samples and information.

### PRESSED STEARIC ACIDS

Neo-Fat® 18-54 Double Pressed  
18-55 Triple Pressed

### SPECIALTY COCO ACIDS

Neo-Fat 8 Commercially Pure Caprylic  
10 Commercially Pure Capric  
12 Commercially Pure Lauric  
14 Commercially Pure Myristic  
265 Double Distilled Coco  
Plus tailored blends of coco fractions

### SPECIALTY PALMITICS AND STEARIC ACID

Neo-Fat 16 Commercially Pure Palmitic  
16-54 70% Palmitic  
18 Commercially Pure Stearic  
18-57 65% Stearic  
18-58 70% Stearic  
18-61 80% Stearic

### OLEIC ACIDS

Neo-Fat 92-04 Low Titer White Oleic  
94-04 Low Titer Red Oil  
94-10 High Titer Red Oil

## PRODUCTION

flow in both directions through the membrane. The pump drawing from the hot channel is bled to obtain "top" product; "bottom" product comes off at the cold-channel pump.

In one respect, thermal diffusion resembles its distant cousin—distillation. The interaction between molecules passing through the membrane in opposite directions is much like the interaction between the liquid and vapor phases in a rectifying column. Major difference: thermal diffusion is limited to the temperature range between the freezing point and the boiling (or decomposition) temperature of the liquid mixture.

Whether the unit's advantages are enough to assure the commercial success of thermal diffusion remains to be seen. At any rate, the results of Jury's and Von Halle's work should go a long way to clear up the confusion that has obscured the basic principle for so many years.

Though Jury believes his separating system can easily be scaled up to full-size production units, chances are that process economics will limit its use, at the start at least, to small-volume separations. A host of hard-to-separate materials—mixtures of isomers, microbiologicals, solvents, dyes and many others—are ready and waiting to test Jury's sandwich.

## EQUIPMENT

**Motor-driven Psychrometer:** The hazard of twirling a sling-psychrometer in confined areas is eliminated by the Psychron, new development of the Friez Instrument Division of Bendix Aviation Corp. (Baltimore, Md.). Key: a fan, operating on 3 flashlight batteries, that pulls air at 15-ft./second across wet- and dry-bulb thermometers. The unit has a relative humidity range of 10 to 100% and a temperature range of 10 to 100 F. It's portable, weighs only 2½ lbs.

**Magnetic Flow Meter:** The Foxboro Co. (Foxboro, Mass.) now offers its Magnetic Flow Meter for 1-in. flow lines as well as for larger diameters. Over-all accuracy of plus or minus 1% of full scale, no flow restriction, and linear readings with flows of 10 gpm. or greater are claimed. Performance of the new meter is reportedly unaffected by corrosive liquids, pressure, viscosity, density or conductivity changes in the flow.

**Gas Chromatography:** Smaller and more compact than earlier models, Burrell Corp.'s (Pittsburgh) new Universal Model K-3 Kromo-Tog gas- and vapor-phase chromatographic analyzer may be bench- or panel-mounted. Basic unit is recommended for routine analysis of liquids with boiling points up to 300 C, as well as gases. Accessories may be added for analysis of complex mixtures if necessary.

**Miniature Thermocouples:** A new, expanded line of miniature thermocouples, designed for use in corrosive gases and liquids, is available from Thermo Electric Co., Inc. (Saddle Brook, N.J.). For sensitivity and rapid response, the hot junction is welded directly to the stainless-steel protective tube encasing the unit. Iron-constantan, copper-constantan and chromel-alumel thermocouples are supplied in temperature ranges from -300 to 1600 F. Protective tube diameters are  $\frac{1}{16}$  to  $\frac{1}{4}$  in.

**High-Vacuum Gate Valves:** The Rochester Division of Consolidated Electrodynamics Corp. (Rochester, N.Y.) offers three new types of high-vacuum, straight-through gate valves. Called the STV series, throttling manual-, quick-acting manual-, or pneumatic-type actuation valves are made in 2-, 4-, and 6-in. diameters. The valves seal vacuum-tight in either direction. Body and valve plate are cast aluminum; working parts are steel.

**Porous Tubing:** A new type of tubing, made from epoxy-impregnated, woven fiberglass by Lamtex Industries, Inc. (Westbury, N.Y.) is said to offer high-temperature and chemical resistance, and various degrees of porosity. Dubbed Poro-Tube, the wall porosity can be controlled when manufactured for uses such as corrosion-resistant filters, high-temperature (up to 350 F) class H motor housings, and anodizing and electroplating fixtures where free current and liquid flows are required.

**Thermocouple Vacuum - Gauge:** Now available from Arthur F. Smith Co. (Rochester, N.Y.) is a new thermocouple vacuum gauge designed for accurate vacuum measurement within the range of 0.5 to 1000 microns Hg. The instrument is temperature-compensating, has a claimed accuracy of plus or minus 2%.

**PICKLES and  
COATS!**

## **AA QUALITY Phosphoric Acid** *—Double-duty bath for steel...*

Pickling and coating for bonding in one dip—another fast-growing use of AA QUALITY Phosphoric Acid. This chemical of a thousand uses, in its various grades, assures utmost quality with economy. Made from 99.9% pure Elemental Phosphorus produced by A.A.C. electro-thermal process with phosphate rock from our own mines. Rigid quality control from mines to finished product . . . dependable supply assured by large-scale production and ample phosphate rock reserves. Good reasons for using AA QUALITY Phosphoric Acid and the other products listed below. Data Sheet or samples gladly furnished—write us today.

*"From our mines to your plant"*

**THE AMERICAN AGRICULTURAL CHEMICAL COMPANY**

Chemical Division: 50 Church Street, New York 7, N. Y. • 30 plants and offices serving U. S., Canada, Cuba



**AA QUALITY PHOSPHORUS PRODUCTS**

**PHOSPHORUS AND PHOSPHORUS COMPOUNDS**

Elemental Phosphorus (Yellow-White)  
Phosphorus Red (Amorphous)  
Phosphorus Pentasulphide - Sesquisulphide  
Ferro Phosphorus (Iron Phosphate)

**PHOSPHATES**

Disodium Phosphate • Trisodium Phosphate  
Dicalcium Phosphate • PHOS-FEED® BRAND

**PHOSPHORIC ACID**

85% N. F. Grade • 75% Pure Food Grade  
50% Pure Food Grade  
Agricultural and Other Grades

**PHOSPHATE ROCK & FERTILIZERS**

All grades Florida Pebble Phosphate Rock  
Superphosphate  
Complete Fertilizers

**OTHER AA QUALITY PRODUCTS**

**FLUORIDES AND SILICOFLUORIDES**

Sodium Fluoride • Ammonium Silicofluoride  
Magnesium Silicofluoride  
Potassium Silicofluoride  
Sodium Silicofluoride • Zinc Silicofluoride  
Silicofluoride Mixture  
Ammonium Fluoborate  
Aluminum Fluoride  
Magnesium Fluoride

**GELATIN**

KEYSTONE® Gelatin: Edible, Photographic,  
Pharmaceutical, Technical

**OTHER PRODUCTS**

Animal Bone Charcoal  
Bone Black Pigment (COSMIC® Blacks)  
Keystone Ammonium Carbonate  
Sulphuric Acid • Insecticides-Fungicides

# Technology Newsletter

CHEMICAL WEEK  
July 7, 1956

**Look for a statement soon from leading psychiatrists** on the efficacy of tranquilizers. In essence, what they'll say is that the newer mental drugs are powerful therapeutic aids in treating the mentally ill. They will, however, deplore their uncontrolled use to ease everyday tensions.

**Callery Chemical last week got a Navy contract** to build a \$38-million plant near Muskogee, Okla., to make high-energy fuels. Callery, a subsidiary of Mine Safety Appliances Co., will build the plant without fee.

Identity of the plant's products is being kept under security wraps. About all the firm will say is that the fuel produced will have applications in missiles and aircraft. Callery received a Navy contract to develop high-energy chemical compounds in 1952, says the project has progressed from lab to pilot plant and is now moving toward "tonnage" production.

But it isn't too hard to determine the general area in which Callery will be working. Item: Callery has long been producing metallic potassium, has recently been putting research emphasis on boron compounds.

**Both these interests would logically fit into** a project to make potassium borohydrides. Callery recently received a patent on a method of making an alkali metal borohydride from the alkali metal, boron trifluoride and hydrogen. (It can also be made from sodium borohydride [CW, May 26, p. 38].)

Potassium borohydride is a lot like sodium borohydride—except that it's nonhygroscopic, has a negative heat of solution and is, in general, easier to handle. (It's also more expensive.) It could well be a jumping-off point for the production of diborane, precursor for pentaborane (liquid) or decaborane (solid).

**Pentaborane has been stirring up a storm of interest** as a potential fuel for rockets and aircraft (CW Technology Newsletter, April 7). It has generally desirable physical properties and a high energy content. In addition, boron hydrides and boron hydride derivatives react violently with water, have been proposed as fuels for underwater rockets. This latter characteristic might well underpin the Navy's interest in such a project.

**Does Stauffer have a fluid-bed process** for making titanium tetrachloride? Although a lot of people have thought so for some time, Stauffer has been very reticent about its production techniques. But an ad being run by the firm on titanium "tet" (as well as chlorides of boron, silicon and zirconium) prominently mentions Stauffer's experience with "fluidized-bed techniques and other modern manufacturing processes."

Du Pont uses a fluid-bed approach in its titanium tetrachloride process (CW, March 19, '55, p. 84).

And it's a good bet that Titanium Metals is taking the fluidized approach in its Henderson, Nev., plant. Its operations there have been described as a fixed-bed chlorination of briquettes. The firm is known to have a fairly extensive investment in briquetting facilities. But published works of its engineers

## Technology

### Newsletter

(Continued)

imply that the fluid-bed process has some inherent advantages. It is thought to have switched at least a portion of its production over to the fluid-bed route.

**Both the Atomic Energy Commission and private power development** groups received a scolding last week from the Joint Congressional Atomic Energy Committee for not moving ahead fast enough on the exploitation of the atom as a source of electric power. It "directed" AEC to start building large-scale plants and approved a bill that sets aside \$400 million toward building commercial and experimental models.

The committee did not, however, go as far as Senator Gore (D., Tenn.) and other Democrats on the committee wished. Gore, an ardent booster of public power, had proposed a bill calling for an expenditure of \$1 billion to build six large atomic power plants.

Although the committee voted 14 to 0 for the \$400-million bill, it is not necessarily assured of going through. Some Republicans have indicated they will want to modify it.

**Ciba's position in reserpine** is strengthened by virtue of a patent just issued to it (U. S. 2,752,251). Assigned to Ciba Pharmaceutical Products Inc. (Summit, N. J.), the patent covers crystalline reserpine, its salts and pharmaceutical preparations of the drug.

**Workers at the University of Texas** have just put the finishing touches on a method of de-inking paper that, they say, will yield paper at a cost lower than that of making new paper. The paper is shredded, placed in water, and the ink is removed by adding a detergent and salt. The mix is heated, an electric current is passed through to increase the separation of ink from cellulose. Result, say inventors Norman Hackerman and William Krodel, is a product that's every bit as good as virgin pulp, from the standpoint of strength, color and brightness.

**Shell Chemical plans to make 5,000 tons** of diammonium phosphate this year at Pittsburg, Calif.—in facilities built for ammonium sulfate production. Shell will continue to make ammonium sulfate there. It feels that by adding the phosphate production, it will give formulators a wider choice of nitrogen-phosphorus ratios.

Flexibility of Shell's process is further pointed up by the company's belief that it could be modified to accommodate wet-process phosphoric—rather than the arc-furnace acid now used.

Shell's process is fundamentally similar to the one developed by TVA. Phosphoric acid and ammonia are mixed in a crystallizer-evaporator. The exothermic reaction supplies most of the heat necessary for the evaporation (under vacuum). Crystals that result are centrifuged, dried and packaged. Because of DAP's lower decomposition point, the reaction is carried out at lower temperatures than is the production of ammonium sulfate. Also, DAP production tends to be more corrosive, requires extra safeguards for reaction equipment.

**A SCHEDULE**  
to meet your needs

## USS Chemicals

United States Steel  
offers prompt  
and efficient service  
on these chemicals

United States Steel has ten plants producing chemicals. When you order your chemicals from U. S. Steel, you are assured of service and shipment to meet your production needs. For more information, contact our nearest Chemical Sales Office, or the United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania. District Sales Offices in New York, Chicago, Cleveland, Salt Lake City, Pittsburgh and Fairfield, Ala.

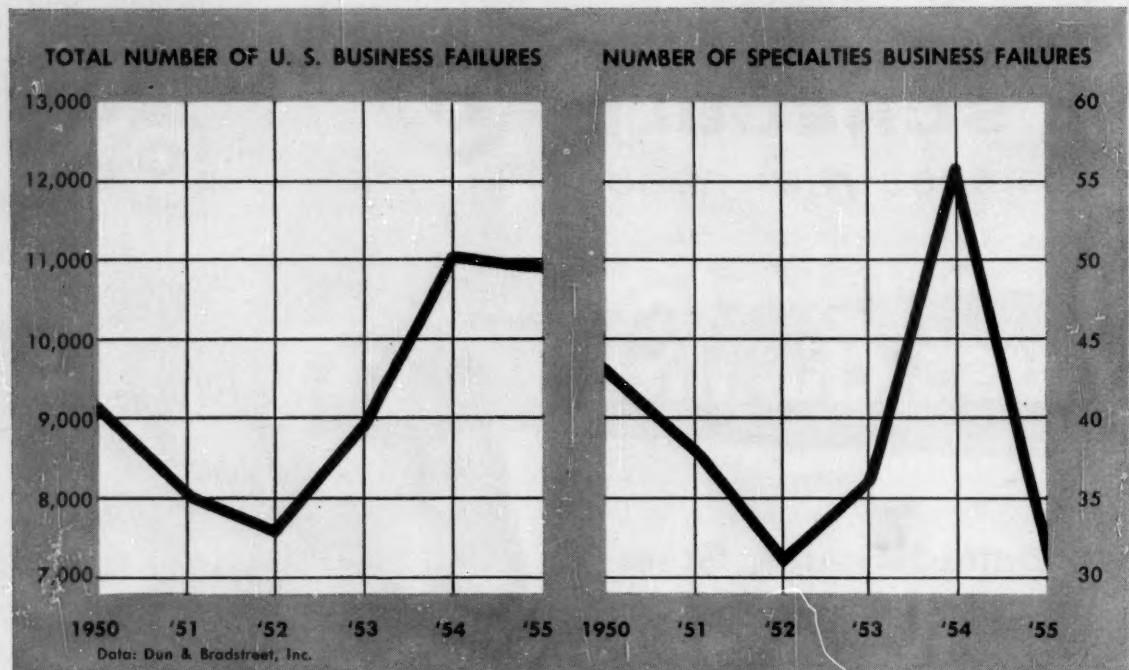
See "THE UNITED STATES STEEL HOUR"  
— Televised alternate weeks — Consult  
your newspaper for time and station.



## USS Chemicals

UNITED STATES STEEL

# SPECIALTIES



## Failure: The Hard Way to Learn

An attitude of optimism is important—perhaps even vital—for business success. But this attitude shouldn't obliterate the cold fact that firms, specialty firms included, fail.

So far this year (through May), according to statistics compiled last week by Dun & Bradstreet, 5,391 firms got into some sort of difficulty that caused them to close their doors, face receivership, or go through reorganization—which resulted in some loss to their creditors.\*

Failures of firms making chemical specialties reflect the national trend in business reversals, but on a smaller scale (*see graphs*). The total of specialties failures has reached the half-hundred mark only once in the last five years,† in a swath of industry encompassing paints and coatings, drugs and cosmetics, pesticides, industrial and household specialties, soap and glycer-

ine, cleaning and polishing chemicals.

There are some noteworthy failure trends within the broad specialties picture, too. In the classification "insecti-

cide, fungicide, and related industrial and household chemicals," for example, the number of firms folding in the past six years has been a rela-



**INVENTORY DIFFICULTIES:** Inexperience causes 9 of 10 business failures.

\*Firms listed as failures often continue in business under the same name after reorganization. The Long Island Railroad is a widely known example of a "failure" that is still very much in business.

†For what D&B terms the chemical industry as a whole, there have been, so far, 22 failures this year (through May). For 1955, the figure was 49; for '54, 75; for '53, 60; for '52, 43; for '51, 49; for '50, 56.

# look . . . it's TITANOX®

**S**he'll really fall for your packaging materials if you use TITANOX titanium dioxide white pigments to increase visibility, contrast and recognition value. For any product that needs a white pigment—whether plastics, rubber, paint, ceramics, leather or paper—TITANOX is your assurance of consistently fine results and uniformly high quality.

Titanium Pigment Corporation (subsidiary of National Lead Company), 111 Broadway, New York 6, N. Y.; Atlanta 5; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.



3886

**MOBY DICK**  
Sperm Oil Products  
WHAT A WHALE OF A DIFFERENCE A LITTLE SPERM OIL MAKES  
WERNER & SMITH INC. 1730 TRAIN AVENUE, CLEVELAND 13, OHIO 10-3676

**MOBY DICK**  
45, NW  
**SPERM OIL**

Cloud . . . . .	44 - 46°F
Pour . . . . .	39 - 42°F
Iodine . . . . .	80 - 90
Unsap. % . . . .	30 - 40
Saponification . . . . .	132 - 140
FFA . . . . .	2% max.

**YEAR-ROUND AVAILABILITY**

Cleveland Refinery      New York Storage

**TWO SOURCES**

Hydrogenated Sperm Oil  
Blown Sperm Oil

IF YOU USE SPERM OIL,  
PLEASE CONTACT US.

**Werner G. Smith**  
Inc.  
4902 Woolworth Bldg., N.Y. 7, N.Y.  
Beekman 3-8215  
1730 Train Ave., Cleveland 13, Ohio  
TOWER 1-3676

## SPECIALTIES



**MARITAL DIFFICULTY:** It leads to neglect, helps shutter 3 of 100 firms.

tively steady 6, 6, 7, 6, 10, 10, respectively. Possible significance: buoyed up by new products for the past decade, the pesticide industry must rely less on novelty to sustain it. Doubtless, the industry is stabilizing as marginal operators fade.

Failures in the cleaning and polishing category have also been fairly even—3, 6, 4, 6, 6, 5, respectively, for the past six years. Perfume and cosmetics manufacture was the only other specialties classification that didn't show a marked drop in failures last year.

**Why They Fail:** Reasons why some firms don't make a go of it vary considerably. But Dun & Bradstreet research can point out that in 9 of 10 cases, the businesses run aground because their operators lack experience.

Inexperience includes such factors as inadequate sales effort, excessive operating expenses, receivables difficulties, inventory troubles, excessive fixed expenses, poor location, competitive weakness.

Neglect—caused by marital difficulties, poor health, bad habits—contributes to the demise of about 3-4 in 100; fraud—including falsification of financial statements, use of misleading name, irregular disposal of assets, pre-meditated overbuying—is behind another 2 to 3 out of 100 failures. In the remaining cases, cause is difficult to determine.

**Tough Lesson:** Though most man-

agement men are reluctant to have their names associated with failures, most are eager to warn others of the particular blocks that took them out of play.

One former manufacturer of pesticidal paint and marine coatings emphasizes the dangers of inexperience: his firm, in the South, had nearly \$400,000 paid-in capital—but those supplying the money to expand his firm to that size demanded a hand in distribution. "They knew even less about selling than I did," he told *CW*, ruefully.

Does he want to try again? "It was a tough blow to me, and it will take a long time for me to recover. I can't start anything now [firm had been formed to exploit his formulations]. But I like being in business for myself—it's always in the back of my mind. I don't want to see control slip out of my hands again."

**Slow Rebuilding:** A Pennsylvania manufacturer expressed much the same attitude toward starting anew. Rising at one time to the status of second largest maker of warfarin-base rodenticides—after a shoestring start of less than \$50 capital—he soon found he was unable to coordinate sales promotion with production. His firm, reorganized, is again filling customers' contracts, and he's now paying off creditors.

"I've never worked for anyone else,"

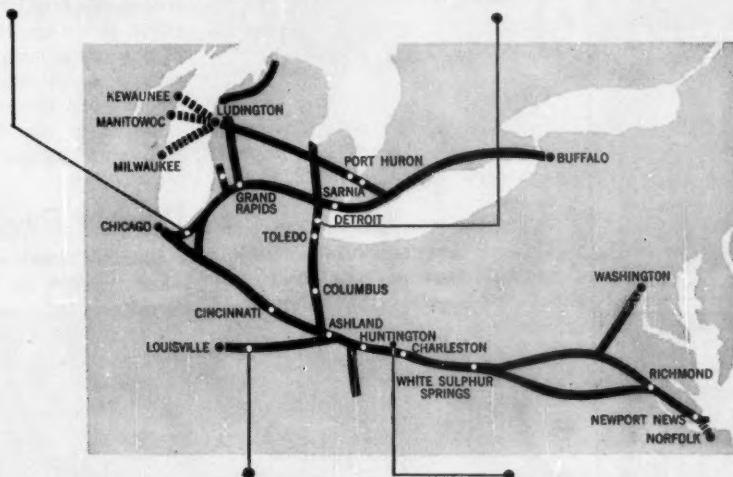
# Take a look at these plant sites

## MICHIGAN CITY, INDIANA

Near enough to Chicago to draw on its labor pools and other advantages, yet a pleasant, small city (30,000), directly on the lake with excellent recreational facilities. Served by five railroads. Several well-located plant sites are available.

## ROMULUS, MICHIGAN

a rapidly growing industrial area on the outskirts of Detroit. Plenty of skilled labor available. 70 acres of prime industrial land on railway and highway. All utilities. Only a few minutes from Willow Run airport.



## LEXINGTON, KENTUCKY

In the heart of the beautiful Bluegrass region, famous for its fine horses and burley tobacco. A new industrial district is adjacent to the railroad and a belt line highway. There is another good site a short way out-of-town.

## WINFIELD, WEST VIRGINIA

where C & O plans a new spur to open up a very desirable industrial area along the south side of the Kanawha River. About 2000 acres will be available for development just beyond the western edge of the Charleston metropolitan area.

**WANT TO KNOW MORE?** If your plans for expansion or decentralization include a location in these or other areas served by us, we shall be glad to give you detailed information on these sites and many others. Your inquiry will be handled by Chesapeake & Ohio in complete confidence. Address: Wayne C. Fletcher, Director of Industrial Development, 32nd Fl., Terminal Tower, Cleveland 1, Ohio.



## Chesapeake and Ohio Railway

SERVING: VIRGINIA • WEST VIRGINIA • KENTUCKY • OHIO • INDIANA • MICHIGAN • SOUTHERN ONTARIO

## SPECIALTIES

# REACTIVATION cuts cost of activated carbon

If you are using sufficient quantities of activated carbon, you will be interested in our reactivation service.

Here's how it works:

NEW CARBON COST	YOU SAVE
\$1.00 per lb.	60-70%
.80	50-60%
.60	40-50%
.40	30-40%

Tell us about your application of activated carbon, let us show you how we can save you money.

**BARNEBEY-CHENAY**  
Company  
CASSADY AT EIGHTH / COLUMBUS 19, OHIO  
In Canada: BARNEBEY-CHENAY LTD., St. John, Quebec



### IRREGULAR USE OF ASSETS: Fraud closes 2-3% of businesses.

he told *CW*. "I'm not planning to change. I want to get my old firm back in shape, and I'm getting there now. But it's slow."

**Cutthroat Competition:** One chemical trade journal recently surveyed chemically trained men, discovered that many hopeful entrepreneurs would go into chemical specialties. The experience of one New York City firm in the manufacture of soaps, disinfectants, and sanitary chemicals might prove eye-opening:

"I never saw such a cutthroat business. I was doing a \$3-4 million/year business (in drug products), decided to try the soaps and disinfectants line. Every time I quoted a price, somebody undercut me. I couldn't even sell for the price I paid for raw materials. I never want to touch chemical specialties again. Never."

**Labor's Love Lost:** Soapmaking has apparently caused woe for several firms. One Los Angeles firm that had to shut its doors last year after 42 years of operation blamed two factors: big soap companies ("it's no secret that they use the government as a dumping ground"), and labor (Harry Bridges' ILWU).

Since the big soapers moved West (about 1945), 15 of 18 small outfits have had to fold—capital for new and modern equipment was too hard to get, and the competitive position was untenable. When ILWU organized employees in '50, jacked up pay rates and limited production, "we had to give up the ghost."

Try again? One firm already has—part of the same plant, but it's now making specialty cleaning compounds (not soaps), distributing basic chemicals for other chemical makers.

Another West Coast specialties maker (paints) blames financial and partnership problems for sending his firm under. Buying out a partner—taken on, originally, to provide needed money—exhausted available funds. Within months, after 11 years of slow growth, the firm was bankrupt. But this manufacturer, too, is starting again.

Plainly, the willingness to work, the novelty of invention, the faith in sales ability can't always insure the success of a firm. There's no assurance, either, that a knowledge of the causes of business failures will make it possible to avoid failure. But the combination of willingness and awareness could make the difference between success and failure.

### Double Deodorants

**Colgate-Palmolive** now has two deodorant soaps on market trial—bithionol-fortified Palmolive (*CW*, April 16, '55, p. 72) and a new hexachlorophene-containing Deodorant Beauty Soap. And the way things stand now, the new entry—a white bar—is getting the more merchandising attention.

Colgate apparently has licked the vexing problem of discoloration, which forced some firms producing bacteriostat-treated soaps to tint their products. Discoloration has been traced to presence of heavy-metal ions, and to a photo effect after exposure to strong light. Manufacturing refinements eliminate the metal problem; guesses are that Colgate has found some chemical way to cope with the harmful light rays.

(Manhattan Soap Co.—now owned by Purex—some time ago introduced a light-colored bar, Protex. Trade sources indicated that it was heavily pigmented with light-colored materials.)

Besides hexachlorophene (sold by Sindar Corp.), the new bar contains lanolin, is priced somewhat higher than Colgate's conventional toilet soaps, but still slightly lower than Armour's pace-setting Dial. The Beauty bar is now under test in Cleveland, Toledo and Youngstown, O., and Berkeley, Calif.

**SPECIALISTS IN  
TECHNICAL  
SOAP**

**TRIETHANOLAMINE OLEATE**  
Carload Quantities Available

- ORGANIC AMINE SOAPS
- AMMONIUM SOAPS
- POTASSIUM SOAPS
- SODIUM SOAPS

Inquiries Invited on All Quantities

**BEACON**  
Chemical Industries, Inc.  
35 RICHDALE AVE.,  
CAMBRIDGE 40, MASS.

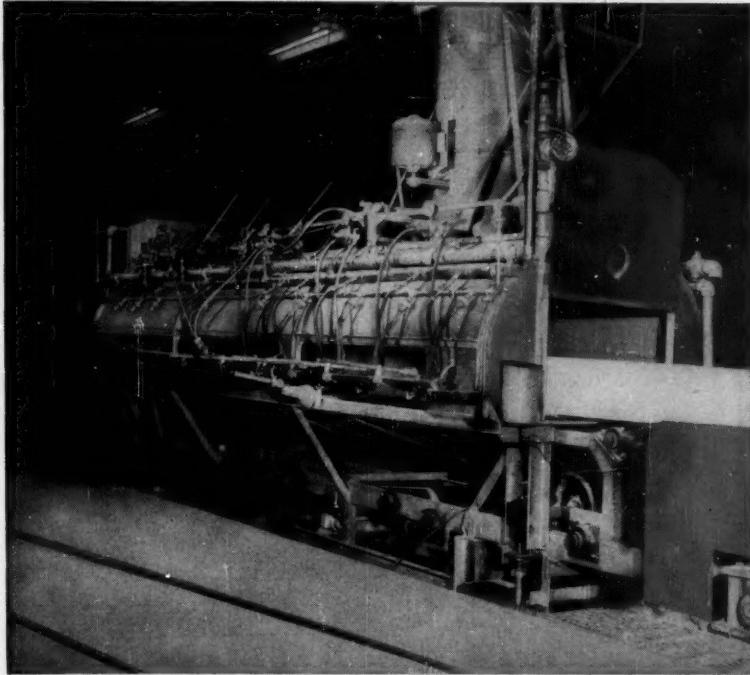
# WHEREVER ADHESIVES ARE NEEDED

## THE KEY IS CMC

♦ IN THE PLANT—In wet-column spray booth at the East Canton, Ohio plant of the Natco Corporation, CMC is used as the adhesive in applying ceramic glaze to structural facing tile.



♦ AT HOME—Sears Roebuck's Workmaster CMC cellulose wallpaper paste makes paper hanging so easy even milady can do it. It has excellent slip, stays moist, is non-staining; and will not sour even if left standing for days.



Whether in a consumer product or for an industrial application, adhesives stick to their job better when Hercules® CMC is included in the formulation.

Water soluble, CMC is compatible with a variety of gums, plasticizers, and resins. CMC will not separate in storage and keeps formulations stable indefinitely and over a wide range of temperatures.

Hercules CMC is uniformly high in quality from lot to lot. For a testing sample, write to Hercules, indicating proposed uses so that proper type may be determined for your purpose.

Virginia Cellulose Department  
**HERCULES POWDER COMPANY**  
INCORPORATED

992 Market Street, Wilmington 99, Delaware



V155-1R

## SPECIALTIES

# PETROCARBON CHEMICALS, INC.

IRVING, TEXAS

Standard Specifications  
Uniform Quality  
Even Evaporation Rate

## AROMATIC SOLVENTS

In Tank Cars, or L.C.L.

Samples and quotations promptly  
furnished by our distributors

WRITE FOR INFORMATION

Methylene Chloride  
Tricresyl Phosphate  
Diocyl Phthalate  
Di-isooctyl Phthalate  
Dibutyl Phthalate  
Butyl Decyl Phthalate  
Didecyl Phthalate  
Chloroform, Tech.



### Chance to Check

Publication, last week, of the Dept. of Commerce's survey of the soap and glycerine industry gave soapmakers their first chance to examine in detail a recent year's soap output figures. Coming soon: a study of synthetic detergent production.

Covering the soap and glycerine industry for 1954, the new survey\* is the first by the government on this subject since 1947. It includes not only the production figures so dear to the hearts of market researchers, but also detailed data on the number of establishments (total: 288), employees (total: 25,300), location (area-by-area breakdown).

\*1954 Census of Manufactures, Advance Report, Series MC-28-4.1, June, 1956. It's sold by the Bureau of the Census, Washington 25, D.C., and the U. S. Dept. of Commerce field offices for 10¢.

As totaled up by the bureau, 1954's U.S. soap output was valued at \$473,983,000—a terrific drop from the '47 figure of \$956,499,000, and plainly revealing the inroads of synthetic washing compounds.

Even in toilet bars, one area where soap would be expected to keep its level, the output figure dropped to 516,435,000 lbs. (worth \$145,084,000) from 561,081,000 lbs. (worth \$190,968,000).

In the case of hard-hit packaged granulated soap, the '54 figure was 366,003,000 lbs. (worth \$78,277,000), down from '47's 1,391,116,000 lbs. (worth \$279,994,000).

In the case of bulk granulated soap, there was a slight jump in production—it went to 133,023,000 lbs. from 131,679,000 lbs. in '47; at the same time, however, value fell—to \$12,926,000 from \$21,449,000.)



### Handled with Care—Automatically

BIG FEATURE of the new Dearborn Chemical Co. (Chicago) compounding plant at Lake Zurich, Ill., is smooth, rapid handling of dry materials—automatically. From the time the three Airveyor unloaders bring the dry raw materials

into the plant (each can move 6 tons/hour) until the cleaning compounds leave the three giant (4,000-lb. batches) drumming hoppers (shown above) the chemicals are measured, moved and mixed by remote control.

# "You can say that again"



## *Thomas Phillips is a Big Name in small bags..*

THE design and manufacture of smaller paper bags — from 2 to 50 lbs. capacities — has been a big part of the business of Thomas Phillips for 84 years. Single, duplex or multiwall . . . self-openers . . . flat or satchel bottoms . . . open mouth or valve . . . poly-coated or special paper . . . for flour, grain, fertilizers, insecticides, seed, paint, dog food — anything that can be bagged.

Thomas Phillips, too, is an integrated mill — from pulp to finished product — making much of our own special paper. Our composition rope kraft, or coated blue lined flour bag paper, is one of the softest and most porous available today. And, we maintain complete art, plate and printing departments to assure you the finest reproductions possible.

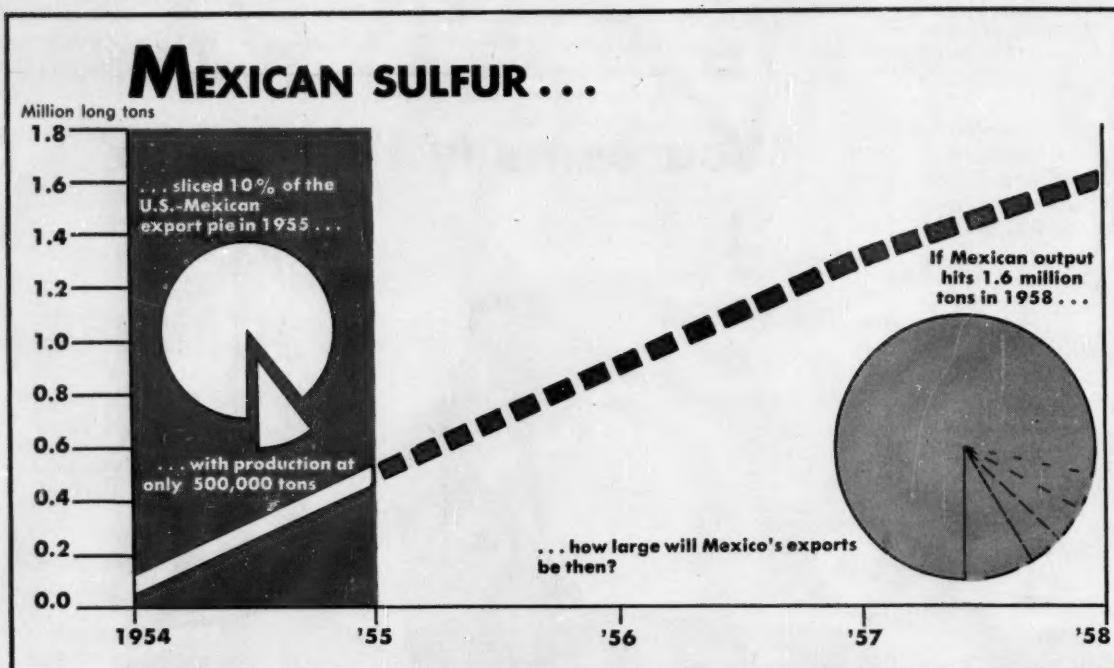
There is a difference in bags . . . and service after sale . . . so why not place a trial order with Thomas Phillips.

Remember, too, that Thomas Phillips is a leading producer of multiwall bags up to 100 lbs. capacity, and we will ship in mixed car lots to suit your production schedules.

THOMAS PHILLIPS COMPANY • AKRON, O.



# MARKETS



## How Big a Slice by '58?

Mexican sulfur producers last year began to nibble at U.S. export markets, had, by year's end, succeeded in gnawing 146,000 long tons off potential U.S. foreign sales of the basic raw material. And in the next few years, as Mexican sulfur output climbs toward an estimated 1.6 million long tons in '58, that country will vie for increasingly larger shares of the world sulfur market.

What does this fast-developing scramble for export sulfur markets mean to U.S. producers? Basically, that sulfur marketers in this country—long free of outside competition—must reshape their thinking, attempt to answer many new and vexing questions:

- How much impact will Mexican sulfur actually have on U.S. exports and on U.S. domestic sales?
- What should producers in this country do to meet the growing competition?
- Is a worldwide sulfur price war in the making?

Some predictions of Mexican sulfur production have already been upset. In 1954, that country produced only

86,000 long tons of native sulfur; in '55, the U.S. Bureau of Mines forecast that, ultimately, an annual output of well over 500,000 tons/year "would not be surprising." Actually, however, more than 500,000 tons were produced last year—and mining facilities were still under construction.

Consensus of industry and government observers now: in '56, Mexican sulfur output will climb to between 800,000 and a million tons; by '57, it will reach 1.2-1.5 million, probably hit at least 1.6 million by '58. This, of course, is small compared with current U.S. annual sulfur output, which last year increased to about 6.9 million long tons.

Nonetheless, there's better than an even chance that Mexico may someday become the world's leading producer of native sulfur. Mexican output doubtlessly will expand far beyond 1.6 million tons/year, while in the next decade or two, U.S. sulfur reserves may begin to dwindle.

Though more than 200 salt domes have been found in this country, only about 20 have been brought into sulfur production; and those still avail-

able for exploitation are relatively small. And though off-shore oil drilling in the Gulf of Mexico is turning up new deposits, it now seems unlikely that U.S. Frasch-sulfur reserves can support a withdrawal of 180 million tons over the next 25 years—an average of about 7 million tons/year.

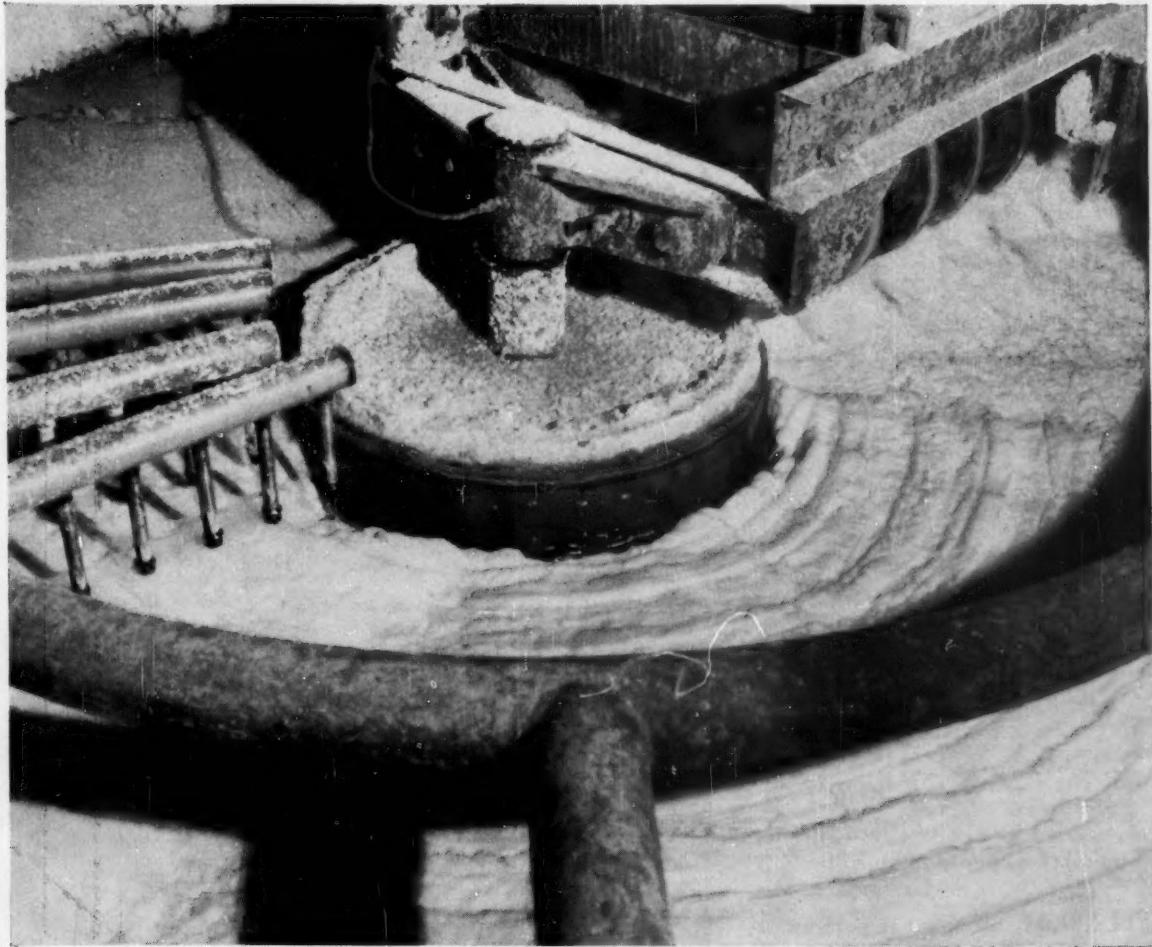
**Worldwide Fracas:** For the present, however, it's more meaningful to compare Mexican sulfur production with U.S. sulfur exports than with total U.S. production, since practically all of Mexico's output will be for export, mostly aimed at the same foreign markets long supplied almost exclusively by U.S. producers.

Last year, the U.S. exported a total of almost 1.6 million long tons of native sulfur to 37 countries, shipped most of it to 5 top customers: Canada bought approximately 348,000 tons; United Kingdom, 295,000; Australia, 174,000; France, 127,000; New Zealand, 119,000.

In the same year, Mexico made an initial bid for world sulfur markets by shipping a total of 146,000 tons to 11 countries, besides the U.S., sold the largest quantities to Australia,

## **West End doubles capacity of sodium sulfate plant**

Acceptance of West End Sodium Sulfate has spread so rapidly that we are enlarging our plant to produce over 100,000 tons a year. Even at this rate we are tapping less than 50% of our natural raw material supply. This output and reserve provides industry with a dependable source of highest quality sodium sulfate to serve its growing needs. Samples, prices and freight schedules will be submitted gladly on request. Please include specifications.



**West End Chemical Company**

SODA ASH • BORAX • SODIUM SULFATE • SALT CAKE • HYDRATED LIME  
EXECUTIVE OFFICES, 1956 WEBSTER, OAKLAND 12, CALIFORNIA • PLANT, WESTEND, CALIFORNIA

## M A R K E T S

United Kingdom, and France.\*

But by 1958, Mexico's sulfur production will roughly equal today's total exports from the U.S. And though global sulfur needs will expand in the next few years, consensus is that the advent of Mexican sulfur in world markets will put a sizable dent into the U.S. export business.

Too, some of the increased demand by other countries will be met by stepped-up local processing of sulfur sources, e.g., pyrites and anhydrite. In England, for example, three plants for making sulfuric acid from anhydrite were completed last year; together, they can reportedly process the equivalent of about 100,000 tons/year of sulfur.

In western Canada, sulfur recovery from natural gas is becoming increasingly important, and capacity continues to grow rapidly. These Canadian ac-

tivities (*CW*, Oct. 8, '55, p. 81)—compared with the developments in Mexico—so far pose a relatively minor threat to U.S. sulfur exports.

But their long-range impact on our exports to Canada cannot be wholly ignored. As one U.S. sulfur expert puts it: "When sulfur output expands in any country to which we normally export the raw material, our business is bound to be affected."

There is one ray of hope for U.S. sulfur exporters: world sulfur consumption now seems to be growing faster than total production capacity; but how supply and demand will balance after another five or ten years is a moot question.

**Double Trouble:** Not content with sniping at U.S.-held foreign sulfur markets, Mexican producers have invaded the U.S. as well. In addition to its other exports, Mexico shipped at least 33,000 tons to consumers in this country. This amount is hardly noticeable next to the 5.5 million tons of sulfur consumed in the U.S. last year, but is nonetheless noteworthy. That

\*Approximate total shipments (long tons) of Mexican sulfur in '55: U.S., 33,400; Australia, 38,700; United Kingdom, 28,400; France, 27,300; Union of South Africa, 17,400; Netherlands, 13,400; Sweden, 6,500; India, 4,400; Israel, 4,000; Belgium, 2,900; Germany, 1,600; Brazil, 1,600—total, 180,000.



### BERKSHIRE CHEMICALS, INC.

420 LEXINGTON AVENUE • NEW YORK 17  
55 New Montgomery St. • San Francisco 5, Calif.  
Innis Speiden Company Division  
New York • Philadelphia • Boston • Cleveland • Chicago

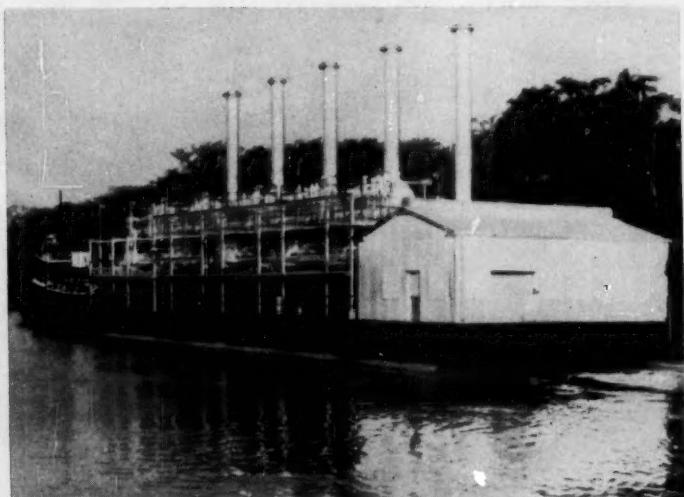


*They have such refined and delicate palates that they can discover no one worthy of their ballots, and then when someone terrible gets elected, they say, "There, that's just what I expected!"*

—Ogden Nash

**GET READY**, by being registered.  
**GET SET**, by knowing what you're voting for. Then—**GO VOTE!**

Published as a public service in co-operation with The Advertising Council



### Floating Frasch Plant

MOBILE MINING is Texas Gulf Sulphur's unique solution of sulfur mining problems in Mexico.

Now ready for operation, the firm's two barge-mounted self-contained plants will produce sulfur from the Nopalapa deposit in the Isthmus of Tehuantepec.

The plant can be shifted so as

to be near the producing areas, thereby reducing expenses for pipes and other materials.

Its air-conditioned control center—push-button operated—regulates equipment to soften and heat water, generate electricity, compress air, and perform other operations in the extraction of sulfur.

... efficient  
economical  
**INDUSTRIAL  
REODORANTS**

an "ALAMASK"  
for every  
purpose!

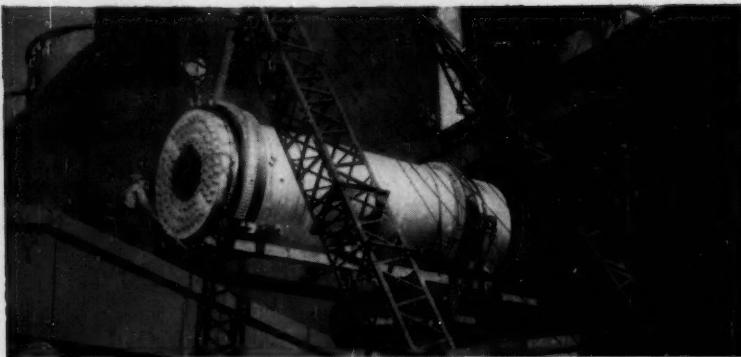
**INDUSTRY**  
Incinerators • Dumps • Sewage Plants  
Pulp and Paper • Petroleum • Fat Rendering • Canning and Vegetable Waste

**MANUFACTURED PRODUCTS**  
Rubber • Plastics • Natural and Synthetic Latex • Petroleum • Inks and Oils  
Sanitary Chemicals • Tall Oil • Paints

**RHODIA INC.**

**60 EAST 56TH STREET  
NEW YORK 22, N. Y.**

Philadelphia • Cincinnati • Chicago • Los Angeles • Canada: Naugatuck, Montreal • Cuba: Luis Felipe, Havana • Mexico: Commercial Reka, Mexico City



## GOING-UP

### "Davenport" Rotary Steam Tube Bean Conditioner 7' x 21'

Built specially to fit available space on the third floor of a large soybean solvent extraction plant in central Indiana.

Let our engineers consult with you on your Pressing, Drying, and Cooling problems. Send for complete Catalog or for quick reference, consult your CHEMICAL ENGINEERING CATALOG, 1954, 1955, or 1956.

**davenport** MACHINE and  
DAVENPORT, IOWA  
U.S.A.  
FOUNDRY COMPANY

**DAVENPORT**  
PRESSING — DRYING  
and  
COOLING Equipment  
Continuous DeWatering  
Presses  
ROTARY DRYERS  
Steam Tube, Hot Air  
and Direct Fire  
Atmospheric  
DRUM DRYERS  
ROTARY COOLERS  
Water and Air

### McGraw-Hill Mailing Lists Will Help You

- Merchandise your advertising • Conduct Surveys
- Get leads for your salesmen
- Get inquiries about your product or service
- Pin-point geographical or functional groups
- Sell Direct • Build up weak territories • Aid Dealer Relations

Direct Mail is a necessary supplement to a well rounded Business Paper Advertising program.

600,000 actual names of the top buying influences in all the fields covered by the McGraw-Hill publications make up our 150 mailing lists. These are built and maintained primarily for our own use, but they are available to you for Direct Mail purposes. Pick out a list of YOUR prospect from our Industrial Direct Mail Catalogue.

More and more, progressive companies are using Industrial Direct Mail regularly as an advertising medium. They effectively allocate a portion of their concentrate on the best business publication.

For complete, detailed information about our service, fill in the coupon or write for your copy of our free Business and Industrial Direct Mail catalogue.



Mc GRAW-HILL  
DIRECT MAIL LIST SERVICE

Direct Mail Division, McGraw-Hill Publishing Co., Inc.  
330 West 42nd St., N. Y. 36, N. Y.

Please forward my free copy of the McGraw-Hill  
"Industrial Direct Mail Catalogue."

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

## MARKETS

the neophyte Mexican industry has been able to penetrate U.S. markets even this far on its first try is cause for added concern among U.S. sulfur producers.

One reason for the success: there's no U.S. tariff on sulfur. Too, the Mexicans have the advantage of being able to use foreign ships, which have lower rates than American vessels. (Producers shipping from one U.S. port to another must use U.S. ships.)

What's ahead? One forecast—based on published reports and private statements by Mexican sulfur producers—is that Mexican sulfur exports to the U.S. will jump to 150,000 tons this year, will double in '57, reach 500,000 tons by '58.

**Price War?** First evidence of the Mexican pinch on U.S. sulfur exports came when this country's major producers, a few months ago (*CW Market Newsletter*, March 10), shaved export sulfur prices by \$3, to \$28/ton.

But Mexican sulfur is being sold at \$26.50-\$27/ton for light material, \$1 less for dark. And some observers predict that the price will drop as low as \$20/ton when competition becomes keener, though others doubt that cuts will be quite so drastic.

Meanwhile, U.S. producers aren't rushing to meet the lower Mexican prices. Explains one spokesman: "There's no profit in it for anyone if we precipitate a price war—furthermore, if prices get too low, marginal producers will be forced out of business."

But U.S. sulfur producers may yet be forced to change their ideas when Mexican sulfur output is stepped up and competition tightens.

Mexican sulfur is in the spotlight, now; but other countries, too, will compete in world sulfur markets. The Italian Parliament has approved a bill lowering Sicilian sulfur prices to make them internationally competitive; Japan is expanding sulfur capacity, reportedly will export part of the output.

What will U.S. producers do? Reluctant to wage a price war, some are belatedly joining the hunt for Mexican sulfur. Texas Gulf Sulphur (see box, p. 74) will soon start operations on the Isthmus of Tehuantepec; Freeport Sulphur now plans an active search for Mexican sulfur. The best answer right now seems to be: "If you can't beat 'em, join 'em."

# Mr. Site-Seeker:

*If you could buy them by the package  
which packages would you buy first?*

How would you number these in order of importance to your new factory? (Place number beside each item)

- |  |   |
|--|---|
| <input type="checkbox"/> BITUMINOUS COAL       | <input type="checkbox"/> MODERATE CLIMATE               |
| <input type="checkbox"/> LIMESTONE & DOLOMITES | <input type="checkbox"/> TOP SEAPORT FACILITIES         |
| <input type="checkbox"/> IRON ORE              | <input type="checkbox"/> NEARBY RESEARCH FACILITIES     |
| <input type="checkbox"/> BRINES                | <input type="checkbox"/> EXCELLENT POWER                |
| <input type="checkbox"/> MANGANESE             | <input type="checkbox"/> ADEQUATE WATER, GOOD RAINFALL  |
| <input type="checkbox"/> CLAYS                 | <input type="checkbox"/> COMMUNITIES WHERE LIFE IS GOOD |
| <input type="checkbox"/> LUMBER                | <input type="checkbox"/> FAIR REAL ESTATE VALUES        |
| <input type="checkbox"/> AGRICULTURAL PRODUCTS | <input type="checkbox"/> REASONABLE TAX STRUCTURES      |
| <input type="checkbox"/> MANPOWER              | <input type="checkbox"/> ROOM TO GROW                   |
| <input type="checkbox"/> TRANSPORTATION        |   |
| <input type="checkbox"/> NEARNESS TO MARKETS   |   |

All these manufacturing advantages are yours in the Land of Plenty — the six great states served by the Norfolk and Western. Why not let our plant location specialists tell you about them — in detail and without obligation? Feel free to describe as fully as you think necessary the type operation you plan, your problems and your objectives — *because every word will be held in confidence.* All information will come to you carefully screened, prepared by specialists who thoroughly understand the problems of manufacturing and distribution as related to plant location.



*Write, wire or telephone:*

L. E. WARD, JR., MANAGER  
INDUSTRIAL AND AGRICULTURAL DEPT.  
Drawer CW-718 (Phone 4-1451, Ext. 474)  
Norfolk and Western Railway  
ROANOKE, VIRGINIA

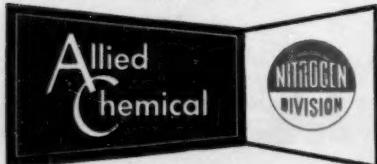
**Norfolk and Western**  
**RAILWAY**

# Arcadian<sup>®</sup> nitrate of soda gives you 3 extras *... at no extra cost*

1. **The size you want.** Only Allied has three grades — coarse (1-C), medium (2-B) and fine (3-A). Choose the one that suits your operation, save special processing and handling.
2. **More usable material.** Crystals are solid — do not crush or create fines in handling, keep their screen sizes.
3. **Exceptional purity — 99.5%!** So pure it's used "as is" in the food and pharmaceutical industries.

Shipped from Hopewell, Va. in bulk and in 100-lb. moistureproof multiwall bags. Write for samples, quotations, literature, technical service with no obligation.

Dept. NI 1-7-2



40 Rector Street, New York 6, N. Y.

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate — 85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Tetroxide • Nitrogen Solutions • Fertilizers & Feed Supplements

# Market Newsletter

CHEMICAL WEEK  
July 7, 1956

A raft of third-quarter price changes—mostly up—went into effect this week (July 1). Here's a quick rundown on the new listings:

Advanced  $\frac{1}{2}$ ¢/lb. are: carbon tetrachloride; methyl chloride; methylene chloride; perchloroethylene; 1,1,1-trichloroethane; trichloroethylene.

Up 1¢/lb.: *p*-tert-butylphenol; pentachlorophenol; phenol (grades 90-92%, 82-84%, 39 C, synthetic); sodium pentachlorophenate; *p*-toluenesulfonic acid.

Up  $1\frac{1}{2}$ ¢/lb.: *o*-chlorophenol; *p*-chlorophenol; triethylamine.

Other items are advanced by the following amounts: barium hydrate, \$8/ton; 2,6-di-*tert*-butyl-*p*-cresol, 9¢/lb.; ethyl alcohol, 5¢/gal.; formaldehyde, 0.2¢/lb.; monoethylamine, 2¢/lb.; *p*-nitrophenol, 3¢/lb.; *p*-phenetidine, 3¢/lb.; *p*-phenylphenol, 2¢/lb.

And on the downside: ammonia (anhydrous, fertilizer and refrigerator grades), \$5/ton; ammonia (aqueous), \$5/ton; ammonium nitrate, dom., \$10/ton; cyclohexanol, 3¢/lb.; nitrogen solutions, 8¢/unit-ton.

A new price cut on titanium metal sponge this week brings the cost of top-grade material to 40% below the high of \$5/lb. in effect slightly over 2 years ago.

Effective immediately are these tabs posted by Du Pont: Grade A-1, \$3/lb.; Grade A-2, \$2.70; Grade A-2 fines, \$2.30.

Demand for the metal has increased following improvements in alloys and fabricating techniques, is reflected in the lower prices. Meanwhile, sponge capacity is increasing rapidly. Du Pont, for example, has already expanded its Newport, Del., plant by about 50%, plans a new unit at another location.

By this week, too, buyers will be reaping the benefits of Du Pont's substantial \$30/lb. price cut on pure silicon. The new tab is still a hefty \$350/lb., but considerably lower than the initial \$430/lb. four years ago when it became commercially available.

First used in the manufacture of radar equipment during World War II, silicon's properties as a semiconductor have made it increasingly important in many electronic applications. It's widely used in transistors, diodes and rectifiers—components of telephone switchboards, radios, TV sets, electric motors.

Spurred by rapidly increasing demand, silicon plant facilities have been steadily expanded—leading to savings in manufacturing costs, which makes possible the current price cut.

The savings will not, however, be realized by ultimate consumers of silicon-containing equipment. Reason: though cost of pure silicon approaches that of gold, only a tiny sliver—worth 5-10¢—is needed for an electronic device such as a transistor.

Because the material must be purified to the point where it contains impurities of only a few parts/billion—a difficult manufacturing problem—

# Market Newsletter

(Continued)

the price remains high. The hyperpure silicon is needed by the electronics industry because exactly measured traces of impurities must be added to give silicon devices the ability to control flow of electric current.

**In a more down-to-earth price range**, tabs on Hexalin cyclohexanol have also been reduced by Du Pont. The largest reduction, for tank car deliveries east of the Rockies, is from 27¢ to 24¢/lb. A smaller decline—from 31 to 30¢/lb.—applies to l.c.l. drum quantities, delivered on the West Coast. Both changes became effective July 1.

Prices of this specialty industrial solvent have been lowered to encourage expanded use in such applications as cleaners, detergents, polishes, plastics, lube and fuel oil additives.

**Flaxseed prices will remain soft** after breaking by 50¢/bushel (12%) from mid-May to mid-June. Prospects now point to a large increase in exportable world supplies in '56-'57, mostly from Argentina and Canada.

Linseed oil prices, says the U.S. Dept. of Agriculture, have followed the decline in flaxseed. Oil sold for 16¢/lb. (raw, tank cars) in mid-May at Minneapolis dropped to 14¢/lb. in June.

**Cutbacks in automobile production**, and the consequent drop in tire manufacture, have created an oversupply of carbon black; however, output of black during the past few months has been high, totaled nearly 778 million lbs. during the January-to-May period—almost 81 million lbs. more than in the corresponding months of '55.

**But carbon black sales parallel the declining demand for rubber.** (The Commerce Dept.'s Business & Defense Services Administration this week forecast that '56 rubber consumption will be 5% below the 1.53 million long tons consumed last year.)

One indication of the sales slump: Witco's new 25-million lbs./year plant at Eunice, N. M., went onstream three weeks ago, but lack of sufficient orders is keeping output at a low level.

The firm's furnace-type plant—which makes carbon black through controlled combustion of natural gas—boosts to 300 million lbs./year the company's total carbon black capacity. Over 90% of the output goes into tires and other rubber products.

## SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending July 2, 1956

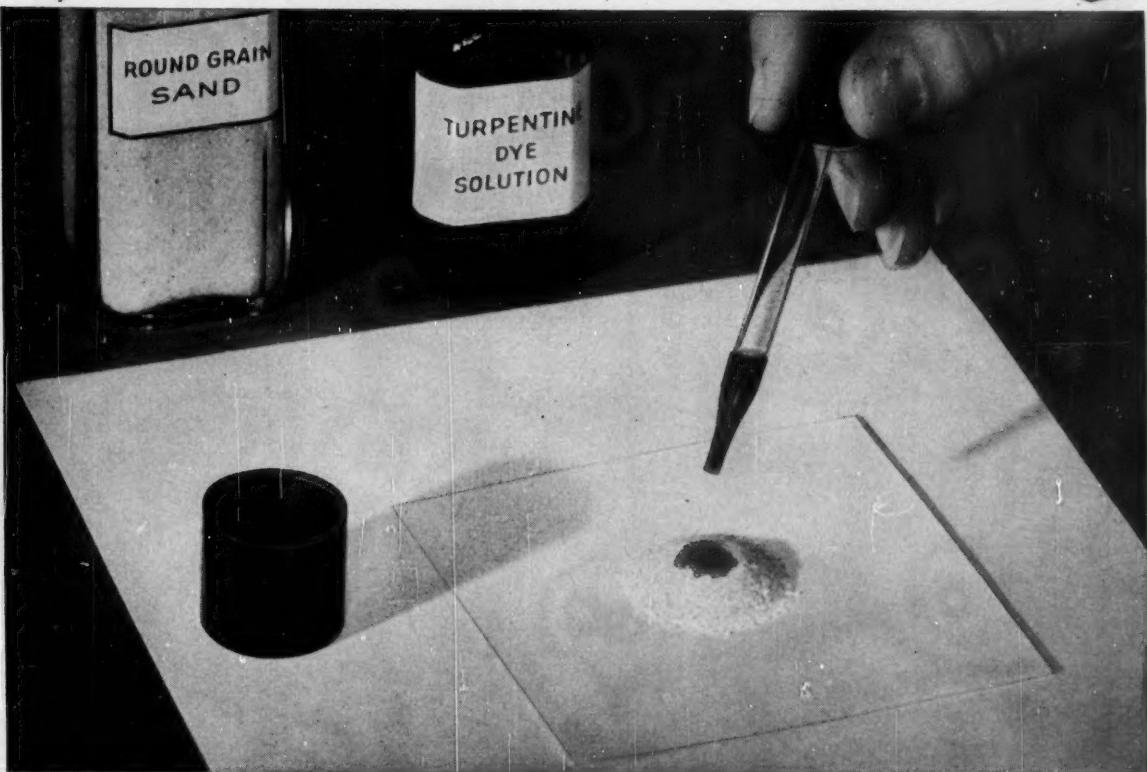
### UP

	Change	New Price
Ethyl alcohol, 190 pr. USP, tax-free, tks., divd. E. of Rockies, gal.	\$ 0.05	\$ 0.42
Phenol, synthetic, tanks, frt. alid., lb.	0.01	0.18

### DOWN

Ammonia, anhyd., fertilizer, frt. equald., ton	\$ 5.00	\$80.00
Cyclohexanol, tanks, works, frt. alid., lb.	0.03	0.24

Dow



Grease resistance of Methocel-coated paper is tested by depositing measured amount of tinted turpentine in sand on its surface.

Results of this test—a standard of the industry—are measured in time required for turpentine to stain the under paper.

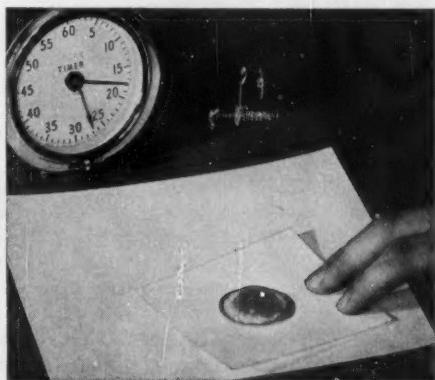
## EFFICIENCY OF METHOCEL COATINGS PROVED IN GREASE RESISTANCE TEST

Paper sizing also affords a method of utilizing the film-forming properties of this cellulose gum

Films and coatings formed of Methocel® (Dow methylcellulose) are tough, flexible and water-soluble. Yet they are resistant to almost all greases, waxes, oils and solvents. These properties provide a most interesting list of present and potential uses.

In the paper industry, Methocel coatings are utilized as parting agents to separate cartons from solidified products, or as sizing to control ink penetration of boxboard stock and paraffin penetration of paper stock.

Many other industries rely on Methocel—safe in the assurance of rigidly maintained quality and always dependable supply. Write us today for more complete information and suggested formulations for your industry, using Methocel, the versatile synthetic gum—and receive a free sample for your investigation. THE DOW CHEMICAL COMPANY, Midland, Michigan, Department ME 825B-3.



The coated paper, bearing the sand, is moved at specified intervals to examine the sheet below for staining, as specified in test method T454m-44 (Technical Association of the Pulp and Paper Industry).

*you can depend on DOW CHEMICALS*

Dow

# RESEARCH



UNITED MINE WORKERS' A. D. LEWIS: 'Scientists and engineers would be foolish not to organize.'

## Labor Lays It on the Line

Despite a fast start a few years ago, (*CW*, April 19, '52, p. 14), professional unions haven't shown spectacular membership gains in recent months. But their beefed-up organizing budgets combined with growing experience and greater emphasis on publicity are good reasons to believe that the lab-coated collective bargainers aren't merely biding their time.

Engineers and Scientists of America (Washington, D.C.), one of the most vigorous of the professional unions, has increased its organizing budget for fiscal year 1956-57 by 20% over last year's expenditure; it will also spend more for publicity. Other labor organizations are also increasing their attention to professionals.

That's why rank-and-file\* researchers—along with other scientists and

engineers in the chemical process industries—can expect to hear more of the union side of such subjects as starting salaries, the technical manpower shortage, and the role of professional societies.

Salaries—always a main battery in the union offensive—are slated for top attention. ESA has expanded the research budget for its National Salary Directory, will conduct more extensive salary surveys.

**Compression Effect:** John Taft, former ESA vice-president and currently its publicity director, considers the narrowing salary differential between new men and their older, experienced colleagues to be especially serious. This "compression effect" has been measured by several surveys (including one by the American Chemical Society of its own membership) which peg the 1955 base salary for chemists with 15 to 20 years experience at about twice

the base pay of first-year employees. But, in 1941, the former earned three times as much as first-year men; and, says Taft, the ratio was 4 to 1 in the mid-1930s.

Taft feels that this situation is driving much-needed men with experience into better-paying administrative jobs or out of the field entirely.

Donald O'Connor, president of the Research & Engineering Professional Employees Assn. (Whiting, Ind.), thinks the compression effect has been accentuated lately. "In a few instances," he says, "men have even been hired at salaries greater than those of men with 1-2 and even 3-4 years experience. We aren't against higher starting salaries, but at the same time, we do want proper merit reviews for older workers."

**Societies Under Fire:** Professional societies are another target for union fire. A. D. "Denny" Lewis, president

\*The Taft-Hartley Act bars unions from organizing supervisory personnel for collective bargaining purposes.



**ESA's TAFT:** 'The narrowing salary differential between new men and their older, experienced colleagues is especially serious.'

'Figures on the dimension of the technical-manpower shortage are grossly inflated, includes individual company estimates that are not realistic.'

'Employers are overglamorizing the prospects for high school students in engineering and science careers, talking of fabulous salaries.'

of District 50\*, United Mine Workers of America, thinks scientists and engineers "would be foolish not to organize."

He regards physicians and lawyers as well organized to promote their economic interests through the American Medical Assn. and the American Bar Assn., respectively. On the other hand, Lewis says, the American Society of Mechanical Engineers originally set out to promote the economic interests of its members, "but it didn't know how to go about it, and failed."

In the opinion of REPEA's O'Connor, the American Chemical Society helps its members—"even if it's only because the society is not against equitable salaries." Engineering groups,

he adds, "in most cases have a negative attitude, perhaps because they're run by men who are also in management, hence might be termed management-dominated." O'Connor doesn't think any society can attack specific problems as well as a union can.

Taft, voicing the union viewpoint, thinks ACS and similar technical societies should "stick to their job of fostering better professional standards, keep out of promoting economic conditions of their members." He feels that societies' leadership, coming from the management level, speaks for management rather than the profession when it comes to salaries, other working conditions. But otherwise, he's all for professional societies.

Some ESA affiliates are pushing for contract terms whereby the employer pays part or all of an employee's membership dues in a professional society. Such terms have been won in

\*District 50 has some control chemists at Allied Chemical and Dye (Hopewell, Va.), picked up through organization of Allied's hourly workers. But District 50 reportedly hasn't actively sought professional research men—either the unorganized or those now organized by others.



some cases. ESA feels the information and literature services of these societies are the best way of keeping research men and scientists in general abreast of their fields and their jobs.

**Slanted Shortage?** Taft and O'Connor have somewhat different views on the technical manpower shortage. O'Connor has some doubt as to whether there's a shortage, points out that help wanted ads are slanted at specialists—implying that there's an abundance of general chemists.

Some technical-manpower shortage is conceded by Taft, but he says it's been "badly overplayed" and that the real problem is "misutilization." Says Taft: "If industry used the professional men (including researchers) they have now just 10% more efficiently we would have the equivalent of a 70,000 increase in their number—more than enough to cover even the largest shortage being talked about today." The

## RESEARCH

figures on the dimension of the shortage, he declares, are "grossly inflated, the wildest 'guesstimates'"—they include, he claims, individual company estimates of the number of employees they would need if they won a contract they're planning to bid upon. One firm, he says, told him that while it listed its need at 3,000 additional engineers, it would hire only 300 if 3,000 showed up on the doorstep the next day.

**Hard Sell:** Taft also has sharp words for the "hard-selling" job now being done to lure high school students into engineering and science careers. He feels that employers are "overglam-

orizing" career prospects by talking of "fabulous salaries."

The Engineers Council for Professional Development, Taft says, in 1953 issued a booklet for high school students. He claims that the sole reference to salaries in the booklet's description of various engineering fields was this quote: "Maximum salaries for a few (engineers) run well over \$100,000 a year." Taft fears many thus wooded are shocked and frustrated at the let-down when they face "conditions as they exist."

Right now, there's no scramble by researchers to join unions, although

general interest seems to be mounting. REPEA, ESA, and others report that letters and requests for information (even from students) are increasing in number. But inquiries from B. S. holders far outnumber those from Ph. D.'s—a possible indication that collective bargaining has some way to go to become collectively appealing.

## Neopentyl Neophyte

Polyvinyl chloride compounders are getting their first glimpse of a new polymeric plasticizer that is also the first potentially large-volume offspring of Eastman Kodak's neopentyl glycol (NPG) (2,2-dimethyl-pentanediol-1, 3\*).

The plasticizer, designated Eastman Polymeric Plasticizer NP-10, is based on NPG and what is probably adipic acid. This conjecture arises from NP-10's price (about 50¢/lb.) and molecular weight (about 1,200), which would appear to rule out another likely but more costly raw material—sebacic acid.

Eastman says NP-10 offers permanence, ease of processing, and unusually light color. It claims that other available polyester plasticizers often do not "mill in" well with vinyls, require limited amounts of a monomeric co-plasticizer such as diethyl phthalate (DOP) or diethyl adipate. But this is said to result in some loss of performance.

Eastman claims NP-10 overcomes this drawback, mills almost as well as DOP (selling for about 33¢/lb.) and produces a clear, flexible, vinyl sheet.

The new product is seeking a niche among polymers offered by Hardesty, Rohm & Haas, General Electric, Union Carbide, Emery Industries, E. F. Drew, Morton-Withers. That means tough competition for the newcomer, but in a market well worth the struggle.



## New Pitch in Alloy Research

PING-PONG balls bouncing against the vibrating tuning forks (*above*) illustrate the comparative damping (mechanical-vibration stopping) behavior of a new Westinghouse alloy Nivco (*CW Technology Newsletter*, June 30) and ordinary low-carbon steel. Nivco (*right*), a high-strength nickel-cobalt alloy containing five other (undisclosed) elements, damps down within a few seconds. Carbon steel vibrates several minutes.

Nivco is the first practical result

of a new research technique that predesigns metals for specific applications. Developed by Westinghouse's acting research director, Clarence Zener, and advisory metallurgical engineer, A. W. Cochardt, the method is expected to minimize time-consuming trial-and-error metallurgical methods, promote quicker discovery of new alloys.

Westinghouse filed for patents on the new alloy, has plans for it in steam turbine blades, compressors in jet engines.

## EXPANSION

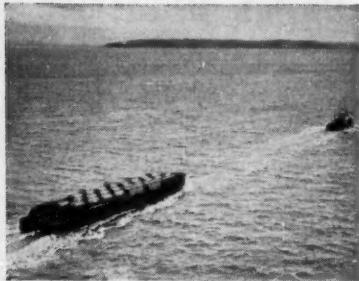
- Minnesota Mining & Manufacturing Co. recently dedicated a new laboratory (at St. Paul, Minn.) for research on insulating materials.

- St. Regis Paper Co. will build a \$330,000 pulp and paper laboratory at its mill and bag plant at Cantonment, about 12 miles north of Pensacola, Fla.

\*Made by condensing isobutyraldehyde with formaldehyde.

# BRIEFS

## for buyers of



### Caustic soda by barge might save you money

Nearby navigable water could make a big difference in the amount you pay for caustic soda and other heavy chemicals.

Some of our customers save up to tens of thousands of dollars a year because they receive more cheaply by barge.

The single barge shown here, for example, is on its way to a pulp mill with 11 tank cars of chemicals above deck, 1000 tons of liquid caustic soda below.

Your Hooker salesman can help you discover whether you can receive caustic and/or other Hooker chemicals more cheaply by barge from one of our plants or stock points.

### Inert, high-density lubricants

Liquid oxygen and hydrogen peroxide—explosive fuels for rockets and guided missiles—have no effect whatsoever on Fluorolube® oils and greases.

Fluorolubes are inert to most other reactive materials, including concentrated nitric acid.

Their densities are unusually high for organic compounds—from 1.8 gm/cc to 2.0 gm/cc. Yet, Fluorolubes wet metallic surfaces readily and thoroughly.

Thermally stable up to 300°C., these Hooker polymers of trifluorovinyl chlo-

ride won't burn at any temperature. They're non-toxic.

Because of these unique properties Fluorolubes show potential for many applications; as lubricants for ultra-precision instruments such as floated gyro units, for valve, pump, and bearing assemblies, for vacuum pumps; and as impregnants for gaskets and packing in highly corrosive service.

There are seven Fluorolubes, ranging from light oils to heavy greases. You can get technical data on all seven by checking the coupon.



### Caustic potash—why the package is important

Expose it to air and solid caustic potash soaks up moisture and carbon dioxide swiftly.

### Caustic Soda

### Inert Lubricants

### Caustic Potash

### Carbonate of Potash

*Result:* weaker, chemically damaged caustic potash that can slow down your processing.

To help you avoid such damage, and to protect the inherent purity of *Nialk*® caustic potash, we make our own shipping containers to our own rigid specifications.

*Result:* You always get *Nialk* caustic potash in the form and strength you want.

You can get *Nialk* caustic potash through all Hooker sales outlets, in these forms:

85% (low iron) and 90% solid, walnut, flake, granulated, broken, crushed and powdered. Flake is available in *low chloride* grade also.

45% to 50% liquid solutions in standard and *low chloride* grades.

If you'd like information on the physical properties of *Nialk* caustic potash, on shipping, etc., check coupon for technical data sheet and bulletin.

### Carbonate of potash

Do you use both caustic potash and carbonate of potash? You might find that a single source for both offers faster, more economical supply. You can get both from Hooker.

**For technical data** on Hooker chemicals discussed on this page, check here:

- Caustic Soda, 50% & 73%
- Caustic Soda, solid and flake
- Caustic Potash
- Carbonate of Potash
- Fluorolubes, oils and greases

**Keep your file up-to-date** with technical data sheets on these other Hooker chemicals:

- Aluminum Chloride
- Lauryl Chloride
- Monochloroacetic Acid
- Muriatic Acid
- Sodium Benzoate
- Sodium Sulfhydrate
- Sodium Sulfide

*Clip and mail to us with your name, title, company address. When requesting samples, please use your business letterhead to help speed delivery.*



**HOOKER ELECTROCHEMICAL COMPANY**

7071 Forty-seventh St., Niagara Falls, N. Y.

Niagara Falls • Tacoma • Montague, Mich. • New York • Chicago • Los Angeles

6-1117

# EMPLOYMENT OPPORTUNITIES

IN THE CHEMICAL PROCESSING INDUSTRIES

- **Displayed Rate**—\$19.50 per inch. Contract rates on request. Advertising inch measures  $\frac{1}{8}$  inch vertically on one column. Subject to Agency Commission. 3 columns to a page.
- **Closing Date**—Each Tuesday, 11 days prior to publication date.



- **Undisplayed Rate**—\$1.80 a line, minimum 3 lines. To figure advance payment, count 5 average words as a line. 10% discount if full payment made in advance for 4 consecutive insertions. Position wanted ads  $\frac{1}{2}$  above rate.
- **Box Numbers** count as one additional line.

Send NEW ADS & INQUIRIES to Classified Adv. Div. of Chemical Week; P.O. Box 12, N.Y. 36, N.Y.

## INDUSTRIAL SALESMEN

Experienced in selling Anhydrous Ammonia, Aqua-Ammonia, Urea and Nitric Acid to Major Industrial Accounts. Applicants must have knowledge concerning application of these products in Industry. Salary commensurate with Ability and Experience. In reply state: Personal Data, Education, Experience and Salary requirements. Inquiries held confidential.

Address reply to:

### SOHIO CHEMICAL CO.

Industrial Relations Dept.  
Box 628  
Lima, Ohio

## TOP LEVEL JOB OPEN

This is a growing, well-diversified company, established prior to 1900. Excellent rating. Sales in eight figures and going up.

If you are the number one or two man who feels advancement possibility is curtailed by superiors too near your own age, here is your opportunity to move into a top job of—

### TECHNICAL DIRECTOR

A challenging opportunity for a top-level chemist or chemical engineer for the direction of our Research and Development Laboratory.

Graduate work preferred but not mandatory. We ask that you have at least 15 years' experience in the field of research and development.

Age to 45. Some travel required. Base of operation Chicago, Illinois, area.

### BENEFITS

Life insurance, hospitalization and surgical, pension, and vacations. Moving and interview expenses paid.

Send complete resume and small photo. Applications held in strictest confidence.

P2217 CHEMICAL WEEK  
520 N. Michigan Ave. Chicago 11, Ill.

#### Available

#### MANUFACTURERS' REPRESENTATIVES SERVING CHEMICAL PROCESS INDUSTRIES

Well established manufacturers' representatives concentrating on sales in the chemical process industries desire an additional line harmonious with existing representation of: specialized fabricated process equipment, crushers, grinders, continuous and batch heat-treating furnaces, packaging equipment.

Territory: New York, New Jersey, Pennsylvania, Delaware, with headquarters in Metropolitan NYC area. Please reply to:

Edward F. James, Pres.  
Technical Sales Associates  
29 Park Court, Verona, New Jersey

#### "RESIN ADHESIVE TECHNICIAN

wanted to develop and manage new Adhesive Division for national organization in Chicago area. State age—experience."

P2212 Chemical Week  
520 N. Michigan Ave., Chicago 11, Ill.

**CHEMIST or CHEMICAL ENGINEER.** Some experience in textile chemical research or development laboratory required, as well as a minimum of a B.S. degree. Superintendence of operation of expanding technical company located in the South. Send in line with training and experience. Write stating age, family status, training and experience, and salary expected.

P 2073 Chemical Week  
330 W. 42 St., New York 36, N.Y.

## Design Engineers Design Draftsmen

If you want { HIGHEST EARNINGS  
OVERTIME WORK  
PERMANENT EMPLOYMENT  
OPPORTUNITY TO ADVANCE  
IDEAL WORKING CONDITIONS  
AIR-COOLED OFFICES  
MANY OTHER BENEFITS

Please be sure to contact or see

### Arthur G. McKee & Co.

with Engineering Offices in  
CLEVELAND, OHIO and UNION, N.J.

McKee is a 50-year-old Engineering and Construction firm doing business on a world-wide basis.

Interesting, well-paying positions for  
**DESIGNERS, ENGINEERS,  
DESIGN DRAFTSMEN and  
DRAFTSMEN qualified in**

PIPING PRESSURE VESSELS  
CONCRETE EQUIPMENT SPECS.  
STRUCTURAL ARCHITECTURAL  
ELECTRICAL MECHANICAL

Refinery, Chemical, Blast Furnace, Steel and Sintering Plant, Industrial or Office Building design or drafting experience desirable but not necessary.

The expanding McKee organization, with three engineering divisions, Refinery, Metals and Industrial, offers many interesting opportunities in these highly-paid fields.

Investigate the opportunities McKee can offer you. If you want complete information write for our free booklet "Your Future in Engineering".

Please see or contact:  
Edward A. Kerner

**Arthur G. McKee & Company**  
2300 Chester Avenue • Cleveland 1, Ohio  
Tower 1-2300

#### • POLYMER RESEARCH •

Organic Ph.D. or equivalent for fundamental research in high polymers. Experience preferred but will consider recent graduate. Forward complete résumé to

C. M. Jackson, Coordinator, Technical Division  
Devoe & Reynolds Company, Inc.  
Box 328, Louisville 1, Ky.

#### TEXTILE CHEMIST

Broad experience with resins and rayons preferred. Must have minimum of B.S. degree in Chemistry. Salary commensurate with experience and training. Write stating age, experience, family status, background and salary expected.

P 2072 Chemical Week  
330 W. 42 St., New York 36, N.Y.

(Continued on opposite page)

(Continued from preceding page)

## NEW PRODUCT DEVELOPMENT

Chemical processing division of large national concern needs man with chemical background and eight plus years experience to head up new product development activities. Work will include both market research and market development studies.

Company offers liberal benefits and excellent salary for qualified applicant. Location is in ideal New England community.

Please send complete information on education, experience and salary desired. All replies confidential.

P2198 Chemical Week  
CLASS, ADV. DIV.  
PO. Box 12, N. Y. 36, N. Y.

### Positions Vacant

**Research Chemist—Ph.D. in Inorganic Chemistry** or Electro Chemistry, capable of carrying out independent research work in leading company specializing in rare earths and minerals. Supervisory responsibilities. Located in Main Line area of Philadelphia. Will consider M.S. background. Submit resume—including education and salary desired—to Foote Mineral Company, Personnel Department, 18 W. Chelten Avenue, Philadelphia 44, Penna.

**Chemist, recent graduate, B.S. or M.S., physical chemistry major, organic minor preferred;** for applications research on new products, chemicals, fillers, polymers; experience desirable but not required. Diversified company in midwest. Send complete resume to: Personnel Department, Diamond Alkali Company, 341 Union Bldg., Cleveland 14, Ohio.

**Chemical Sales Engineer wanted by American firm** in Japan representing prominent U.S.A. manufacturers of all types Industrial Chemicals including dyestuffs. Must be experienced and qualified to sell to customers and direct native sales force. Apply P-2193, Chemical Week, giving references, resume of education, experience, salary expected.

### Positions Wanted

**Chemical Engineer, M.I.T. 1937,** would like to participate in or establish market research, development program on rare earth, thorium uses. Salary \$9,600. PW-2218, Chemical Week.

**Chemical Executive—15 years' experience sales,** sales management, research, development and advertising desires responsible position. Ph.D. \$18,000. New York City area preferred. PW-2188, Chemical Week.

**Technical administrator or technical assistant.** Ph.D. in chemistry. Varied interests. Research and development programs; experience with scientists, engineers, non-technical personnel. PW-2182, Chemical Week.

### Selling Opportunities Wanted

**Established Distributor of Chemicals in Atlanta,** Georgia, interested in taking on new Chemical line. We have a large warehouse, can make sales and service accounts in large area. RA-1930, Chemical Week.

**Manufacturers' Agent with New York office,** Sales Facilities, wishes additional lines to represent, Eastern area. RA-2016, Chemical Week

### DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

# TRACERS TO THE CHEMICAL PROCESSING INDUSTRIES

- USED/SURPLUS EQUIPMENT
- CHEMICALS WANTED/OFFERED
- Displayed Rate—\$16.50 per inch. Contract rates on request. Advertising inch measures  $\frac{1}{2}$  inch vertically on one column, 3 columns to a page. Not subject to Agency Commission.
- Box Numbers count as one additional line in undisplayed ads.
- SPECIAL SERVICES
- BUSINESS OPPORTUNITIES
- Undisplayed Rate—\$1.80 a line; minimum, 3 lines. To figure advance payment, count 5 average words as a line. 10% discount if full payment is made in advance for 4 consecutive insertions.
- Closing Date—Each Tuesday, 11 days prior to publication date.

Send NEW ADS & INQUIRIES to Classified Adv. Div.  
of Chemical Week; P.O. Box 12, N.Y. 36, N.Y.

### SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS  
PLASTICIZERS, RESINS, DYES  
SOLVENTS, PIGMENTS, ETC.  
CHEMICAL SERVICE CORPORATION  
96-02 Beaver Street, New York 3, N.Y.  
HAnover 2-6970

### For Sale

**Rotary Hot Air Dryer, 5' dia. x 30' 4" long**  
x  $\frac{3}{4}$ " steel shell. Perry, 1415 N. 6th St., Phila. 22, Pa.

**Sharples Super D-Hydrator, Model C-27** stainless steel. Perry Eqpt. Corp., 1415 N. 6th St., Phila. 22, Pa.

**3000 gal. Stainless Steel Tank, 7' dia. x 10' high**  
x  $\frac{5}{16}$ " thick, type 304 st. st. dished heads. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

**De Villiss foam spray equipment gun, heater,** pump, pressure valve, flowmeter and hose—Used. The R-W Mfg. Co., Box 590 24 Brown St., Barberston, Ohio. Plaza 3-8415—W. R. Lawton.

### Plant for Rent

**Plant for Rent, N.J. Area, Paterson, N.J.** One story industrial, brick building, appr. 26,000 sq. feet, sprinklered, A.D.T. wired, heavy utilities lines, heavy duty floors, several loading platforms, finished offices available, laboratory, 125 HP. Scotch Marine Boiler, railroad siding, 45,000 gallon underground storage tanks. Ample parking and yard space. AAA tenant desired. Available Sept. 1, 1956. PFR-2174, Chemical Week.

## OPPORTUNITIES

business; personal or personnel; financial; equipment; etc., may be offered or located through the classified advertising section of CHEMICAL WEEK. For more information, write to: CLASSIFIED ADVERTISING DIVISION P.O. Box 12 New York 36, New York.

## LIQUIDATING COMPLETE PLANT

located in the South West

### Principal equipment

- \*317 HP Gas Fired Boiler
  - \*Inconel Evaporator Compl.
  - \*Pfaudler 1000 Gal. Reactor
  - \*Stainless & Steel Tanks
  - \*Bird Rub. Cov. Centrifugals
  - \*Mike Pulverizer No. 2
  - \*Complete Laboratory
  - \*Air Cond. Water Conditioning
  - \*10 Acres; 6 Buildings
  - \*Ample Supply Natural Gas
- Good for Chemicals, Food, Pharmaceuticals etc. Write

Mr. FRF  
209 10th St., Brooklyn 15, NY

## FILM FINISHING PLANT

Nationally-known manufacturer desires to acquire an operating company with good technical personnel and facilities for finishing plastic films, such as embossing, printing, laminating, coating, etc. All replies held in strict confidence.

BO 2205 Chemical Week  
Class. Adv. Div. P.O. Box 12, N.Y. 36, N.Y.

### SURPLUS CHEMICALS WANTED

Chemicals—By-Products—Plasticizers  
Pigments — Resins — Solvents  
CHEMSOL, INC.  
70 Old Street, Elizabeth, N.J. EL 4-7654

BUYERS OF SURPLUS  
CHEMICALS—OILS—SOLVENTS  
DRUGS—RESINS—WAXES  
PLASTICS—COLOR—ETC.  
BARCLAY CHEMICAL COMPANY, INC.  
75 Varick Street New York 13, N.Y.  
WORTH 4-5120

SURPLUS BOUGHT  
ODD LOTS—DISCONTINUED RAW MATERIALS  
—SPILLS OR CONTAMINATED SOLVENTS  
RESINS—METALS—GLASS  
OBsolete PLANT INVENTORIES  
Industrial By-Products Surplus Co.  
DIV. OF ACETO CHEMICAL CO., INC.  
49-40C Lawrence St., Flushing 54, N.Y.  
INdependence 1-4100

# MANAGEMENT SERVICES

## Clark Microanalytical Laboratory

*Routine analyses in one week*

CH. N. S. Halogen, Fluorine, Oxygen, Alkoxyl, Alkoxide, Acetyl, Terminal Methyl, etc., by specialists in organic microchemical analysis.

HOWARD B. CLARK, DIRECTOR  
P. O. Box 17 Urbana, Ill.

## FOOD RESEARCH LABORATORIES, INC.

Founded 1922

Research • Analyses • Consultation  
Chemical, Nutritional, Toxicological Studies  
for the Food, Drug and Allied Industries  
48-14 33rd Street  
Long Island City 1, N.Y.

## MACCO CORPORATION

Engineering, Design, Drafting,  
Construction, Process Engineering  
for  
Petroleum Refineries, Chemical  
and Petro-Chemical Plants  
Address: Refinery and Chemical Division  
14409 So. Paramount Blvd., Paramount,  
(Los Angeles) Calif. Phone: NEVADA 6-1261

## Modern Plastics Research Corp.

SPECIALIZED MARKET RESEARCH  
IN PLASTICS AND PACKAGING  
Services available for major market studies  
or for spot reports.  
Write or telephone  
for details and free descriptive literature.  
575 Madison Avenue, New York 22, N.Y.  
Plaza 9-2710

## THE C. W. NOFSINGER CO.

"In Engineering, it's  
the PEOPLE that Count"  
Engineers and Contractors for the Petroleum  
and Chemical Industries  
906 Grand Ave. • Kansas City 6, Missouri  
Phone BALTIMORE 1-4146

## JAMES P. O'DONNELL

### Consulting Engineer

Professional Engineering for the  
Petroleum and Process Industries  
39 Broadway  
New York 6, N.Y.  
Beaumont, Texas  
Tulsa, Oklahoma

## SIRRINE

ENGINEERS  
Plant design & surveys covering Chemical Elec-  
trochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment;  
Analysis & Reports

J. E. SIRRINE CO.  
Greenville South Carolina

## TECHNICAL ENTERPRISES, Inc.

Engineers—Consultants—Chemists  
to  
Chemical—Food—Pharmaceutical Industries  
Complete Engineering Services  
Product & Process Research & Development  
SPECIALISTS IN  
SMALLER MANUFACTURING PLANTS  
81 South St., New York 4, N.Y. WH 8-1544

## ROGER WILLIAMS

Technical & Economic Services, Inc.  
• ENGINEERING ECONOMICS  
• MARKET RESEARCH  
• PRODUCT EVALUATION  
Write for "Profit Evolution"  
148 East 58th Street, New York City 18  
Murray Hill 5-5257

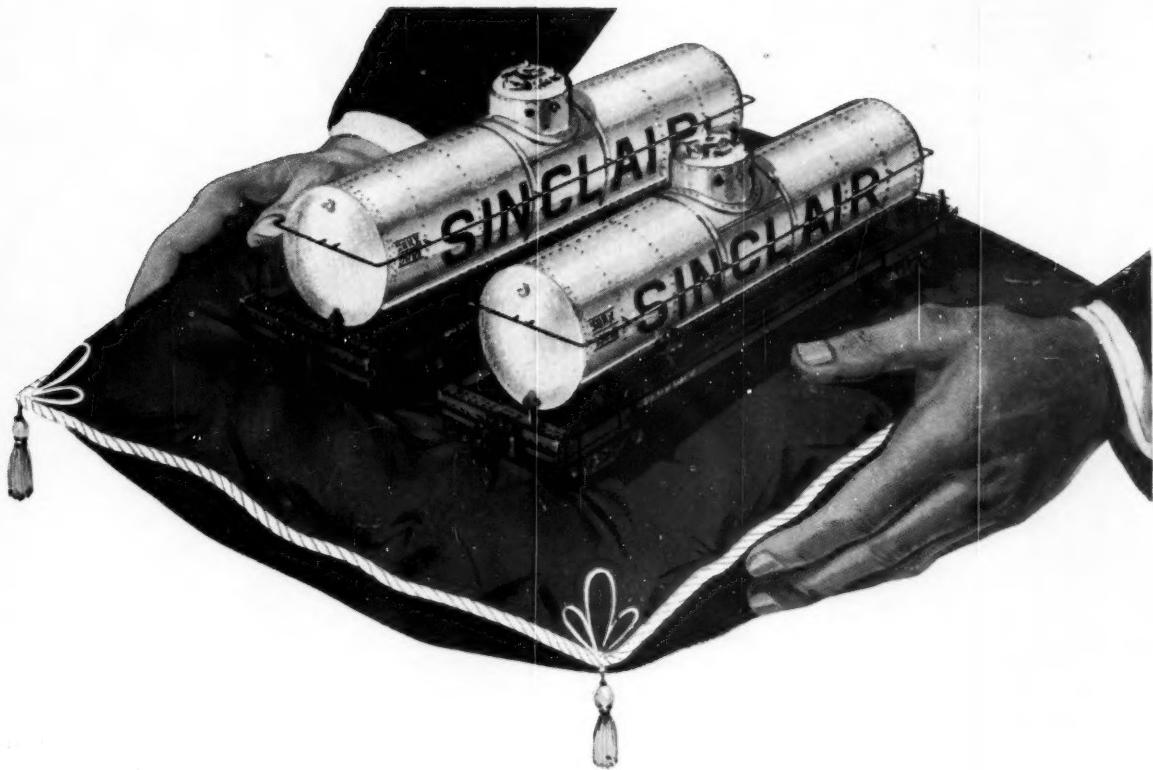
## CHEMICAL WEEK • ADVERTISERS INDEX

July 7, 1956

AMERICAN AGRICULTURAL CHEMICAL CO., THE	60	PRITCHARD & CO., J. F.	14-15
Agency—Donahue & Co., Inc.		Agency—Carter Adv. Agency	
AMERICAN CYANAMID CO.	36-37	RHODIA, INC.	75
Agency—Hazard Adv. Co.		Agency—The House of J. Hayden Twiss	
AMERICAN FLANGE & MANUFACTURING CO.	18	ROHM & HAAS CO.	47
Agency—Freiwald & Coleman, Adv.		Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.	
AMERICAN POTASH & CHEMICAL CORP.	34	SHAWINIGAN RESINS CORP.	35
Agency—The McCarty Co.		Agency—Wilson, Haight, Welch & Grover, Inc.	
ARMOUR & CO.	58-59	SHEA CHEMICAL CO.	24
Agency—Foot, Con & Belding, Inc.		Agency—Doe-Anderson Adv. Agency	
ATLANTIC REFINING CO.	41	SHELL CHEMICAL CORP.	2nd Cover
Agency—W. A. Ayer & Son, Inc.		Agency—J. Walter Thompson Co.	
BAKELITE CO., DIV. OF UNION CARBIDE & CARBON CORP.	17	SHIPPER'S CARLINE CORP.	49
Agency—J. M. Mathes, Inc.		Agency—French & Preston, Inc.	
BAKER CHEMICAL CO., J. T.	57	SINCLAIR CHEMICALS, INC.	3rd Cover
Agency—Wildrich & Miller, Inc.		Agency—Morey, Hume & Johnstone, Inc.	
BARECO WAX CO.	54	SMITH INC., WERNER G.	66
Agency—John C. Fellows Co.		SOLVENTS & CHEMICALS GROUP, THE	26
BARNEBEY-CHENEY CO.	68	Agency—Weiss & Geiler, Inc.	
Agency—Ryer & Bowman, Adv.		STRAN-STEEL CORP., DIV. OF NATIONAL STEEL CORP.	50-51
BEACON CHEMICAL INDUSTRIES, INC.	68	Agency—Campbell-Ewald Co.	
Agency—Mina Lee Simon, Adv.		TITANIUM PIGMENT CORP.	65
BERKSHIRE CHEMICALS, INC.	74	Agency—Doyle, Kitchen & McCormick, Inc.	
Agency—Givaudan Adv. Inc.		U. S. RUBBER CO.	11
CARBIDE & CARBON CHEMICALS CO., DIV. OF UNION CARBIDE & CARBON CORP.	55	Agency—Fletcher D. Richards, Inc.	
Agency—J. M. Mathes, Inc.		U. S. STEEL CORP., COAL CHEMICALS DIV.	63
CHESAPEAKE & OHIO RAILROAD	87	Agency—Batten, Barton, Durstine & Osborn, Inc.	
Agency—Robert Conahan, Inc.		VAN AMERINGEN-H-EBLER, INC.	3
CLIMAX MOLYBDENUM CO.	13	Agency—Oliver Beckman, Inc.	
Agency—G. M. Basford Co.		WEST END CHEMICAL CO.	73
COLTON CHEMICAL CO.	48	Agency—Norton M. Jacobs, Inc.	
Agency—The W. N. Gates Co.		WESTVACO MINERAL PRODUCTS DIV., FOOD MACHINERY & CHEMICAL CORP.	2
DAVENPORT MACHINE & FOUNDRY CO.	76	Agency—James J. McMahon, Inc.	
Agency—Bawden Bros. Inc.		WYANDOTTE CHEMICAL CORP.	43
DODGE & OLcott, INC.	40	Agency—Brooke, Smith, French & Durrance, Inc.	
DOW CHEMICAL CO., THE	81		
Agency—MacManus, John & Adams, Inc.			
DU PONT DE Nemours & CO., INC., EXPLOSIVES DEPT.	5	tracers SECTION	
Agency—Batten, Barton, Durstine & Osborn, Inc.		(Classified Advertising)	
DU PONT DE Nemours & CO., INC., POLYCHEMICALS DEPT.	33	F. J. Eberle, Business Mgr.	
Agency—Batten, Barton, Durstine & Osborn, Inc.			
EASTMAN CHEMICAL PRODUCTS, INC.	31	CHEMICALS: Offered/ Wanted	87
Agency—Fred Wittner, Adv.		EMPLOYMENT	86 & 87
ENJAY CO., INC.	53	EQUIPMENT: Used/Surplus Now	87
Agency—McCaughan-Erickson, Inc.		For Sale	87
EVANS RESEARCH & DEVELOPMENT CORP.	56	WANTED	87
Agency—Ritter, Sanford & Price, Inc.		MANAGEMENT SERVICES	88
FRONTIER CHEMICAL CO.	7	SPECIAL SERVICES	88
Agency—The McCormick Armstrong Co.			
GENERAL AMERICAN TRANSPORTATION CORP., WIGGINS GASHOLDER DIV.	45		
Agency—Weiss & Geiler, Inc.			
GIRDLER CO., THE	29		
Agency—The Griswold-Eshleman Co.			
GOODYEAR TIRE & RUBBER CO.	1		
Agency—Kudner Agency, Inc.			
GRAVER TANK & MANUFACTURING CO.	6		
Agency—The Bucher Co.			
HARSHAW CHEMICAL CO., THE	23		
HERCULES POWDER CO.	69		
Agency—Fuller & Smith & Sons, Inc.			
HEYDEN CHEMICAL CORP.	4th Cover		
Agency—Sommers-Davis, Inc.			
HINDE & DAUGH PAPER CO.	12		
Agency—Howard Swink Adv.			
HOOKER ELECTRO-CHEMICAL CO.	85		
Agency—Charles L. Rumrill & Co.			
KELDO CO.	42		
Agency—Carton, Inc.			
KELLOGG CO., THE M. W.	38		
Agency—Ellington & Co.			
KOLKER CHEMICAL CORP.	70		
Agency—The House of J. Hayden Twiss			
LUMMUS CO., THE	8		
Agency—G. M. Basford Co.			
METASAP CHEMICAL CO.	25		
Agency—Lewis, Williams & Saylor, Inc.			
NATIONAL CARBIDE CO., DIV. OF AIR REDUCTION CO., INC.	39		
Agency—G. M. Basford Co.			
NITROGEN DIV., ALLIED CHEMICAL & DYE CORP.	78		
Agency—G. M. Basford Co.			
NORFOLK & WESTERN RAILWAY	77		
Agency—Hoek & Co., Inc.			
PETROCARBON CHEMICALS, INC.	70		
PETRO-CHEM DEVELOPMENT CO.	4		
Agency—Sam J. Gallay Adv.			
PHILLIPS CO., THE THOMAS	71		
Agency—McClure & Wilder, Inc.			

## ADVERTISING STAFF

Atlanta 3	William Kearns 801 Rhodes-Haverty Bldg., Walnut 5778-2333
Boston 16	350 Park Square Building Hubbard 2-7160
Chicago 11	Alfred D. Becker, Jr. Francis E. Stewart, 520 N. Michigan Ave., Mohawk 4-5800
Cleveland 15	Vaughn K. Diestette, 1510 Hanna Bldg., Superior 1-7000
Dallas 2	Gordon L. Jones, Adolphus Tower Bldg., Main & Akard Sts., Prospect 7-5064
Detroit 26	856 Penobscot Bldg., Woodward 2-1793
London H.	Lagler, McGraw-Hill House, 95 Farrington St., E.C. 4, England
Los Angeles 17	Peter Carberry, 1125 West Sixth St., Madison 6-9351
New York 36	Knox Armstrong P. F. McPherson, Charles F. Onasch, L. Charles Todaro, 380 West 42 St., Longacre 4-3000
Philadelphia 3	William B. Hannum, Jr. Architects Bldg., 17th & Sansom Sts., Rittenhouse 6-0670
Pittsburgh 22	919 Oliver Bldg., Atlantic 1-4707
San Francisco 4	William C. Woolston, 68 Post St., Douglas 2-4600
St. Louis 8	8615 Olive St., Continental Bldg., Jefferson 5-4867



## ...SINCLAIR CHEMICALS ALWAYS RIDE FIRST-CLASS!

Two special fleets of tank cars are added assurance that you get what you pay for when you specify Sinclair! To guard against contamination, Sinclair ships odorless solvents and aromatics in separate tank car fleets used exclusively for this purpose. It saves trouble!

**TRULY ODORLESS SOLVENTS** — Sinclair's team of truly Odorless Solvents, both Light (340-405° F.) and Heavy (375-465° F.), are synthetically produced from carefully selected hydrocarbons to insure the uniformity, stability and superior quality required by manufacturers of odorless paints. Available in full, or split tank car quantities.

**HIGH PURITY AROMATICS** — Toluol (1° nitration grade), Xylol (5°), and Paraxylene (98%) are being produced by modern Udex extraction facilities at Sinclair's Marcus Hook, Pa., refinery. Available in full, or split tank car quantities.

When your manufacturing processes call for fast and reliable service, and top quality in petroleum-derived chemicals, Sinclair Chemicals, Inc. is ready to serve you. For complete information call or write to:

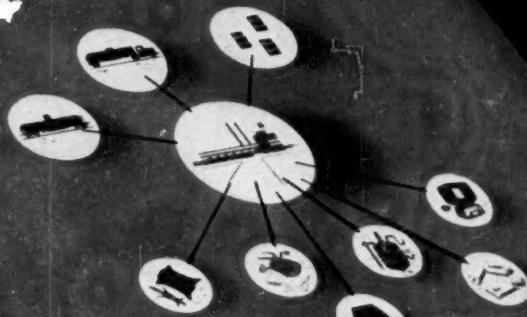
# SINCLAIR CHEMICALS, INC.

(Affiliate of Sinclair Refining Company)

600 Fifth Avenue, New York 20, N. Y. • Phone: Circle 6-3600  
155 North Wacker Drive, Chicago 6, Illinois • Phone: Financial 6-5900

# New! --- from Heyden

## FORMALDEHYDE



al Corporation • 312 Madison Ave., New York 17, N.Y.

--- you'll want these facts on

## FORMALDEHYDE

This informative Heyden Booklet—just off the press and ready for the process industries—contains technical information on formaldehyde which will be of value to you in your production and development work. It answers questions on physical properties, specifications, typical reactions and construction materials for storage and handling. It gives detailed facts on industrial applications in the fields of agriculture, plastics, pharmaceuticals, dyes and textiles, metals, paper, rubber, petroleum, leather, explosives.

The new Formaldehyde booklet contains: Product Data . . Methods of Analysis . . Safe Handling.. Materials of Construction.. Storage and Shipping Data . . Industrial Applications.

A request on your company letterhead will bring you a copy of this interesting booklet.



**HEYDEN**  
CHEMICAL CORPORATION

342 Madison Avenue, New York 17, New York  
CHICAGO • CINCINNATI • DETROIT • LOS ANGELES • PHILADELPHIA  
PROVIDENCE • SAN FRANCISCO

Benzaldehyde • Benzoic Acids • Benzyl Chloride • Beta-Oxynaphthoic Acid • Chlorotoluenes • Creosotes • Formaldehyde • Formic Acid • Guaiacols  
Parahydroxybenzoates • Pentaerythrityl • Propyl Gallate • Resorcinol • Salicylates • Salicylic Acid • Sodium Benzoate • Sodium Formate